



# Indian Food **Packer**

All India Food Processors' Association

VOL.55

MARCH- APRIL 2001

No.2





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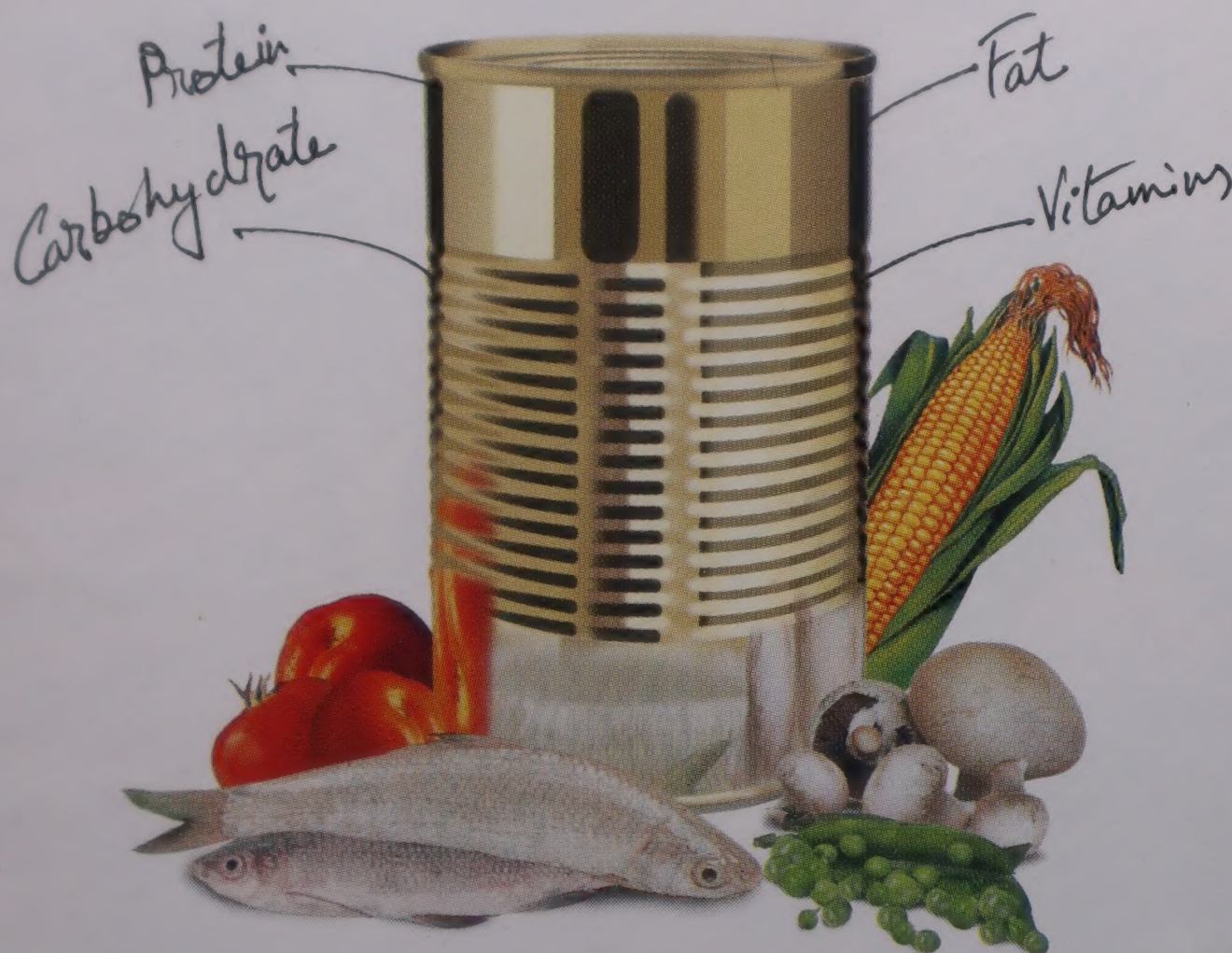
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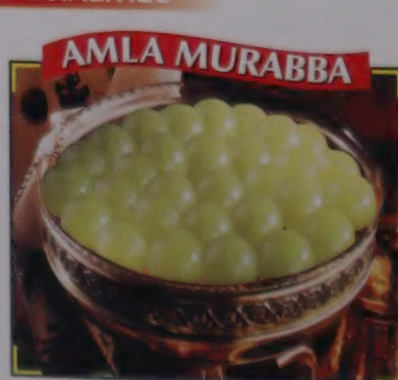
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# Editorial

## *Impetus to Food Processing Industries*

It is heartening to note that the Government of India after a decade has again realized the importance of Food Processing Industry. It is formulating a National Food Processing Policy to words achieving all round growth and development of Food Processing Industry. The removal of Excise Duty on Processed Fruits & Vegetables announced in this year's Budget augurs well. The Government is also considering a 10 year tax holiday, creation of equalization fund and other measures to help the farmers. A large investment of Rs.1,40,000 crores is required to increase the present level of 2% utilization of Fruits & Vegetables for processing to 10% in the next ten years. The Exim Policy also focuses on value added agricultural exports and the new industrial policy 1991 would attract foreign investment in this sector.

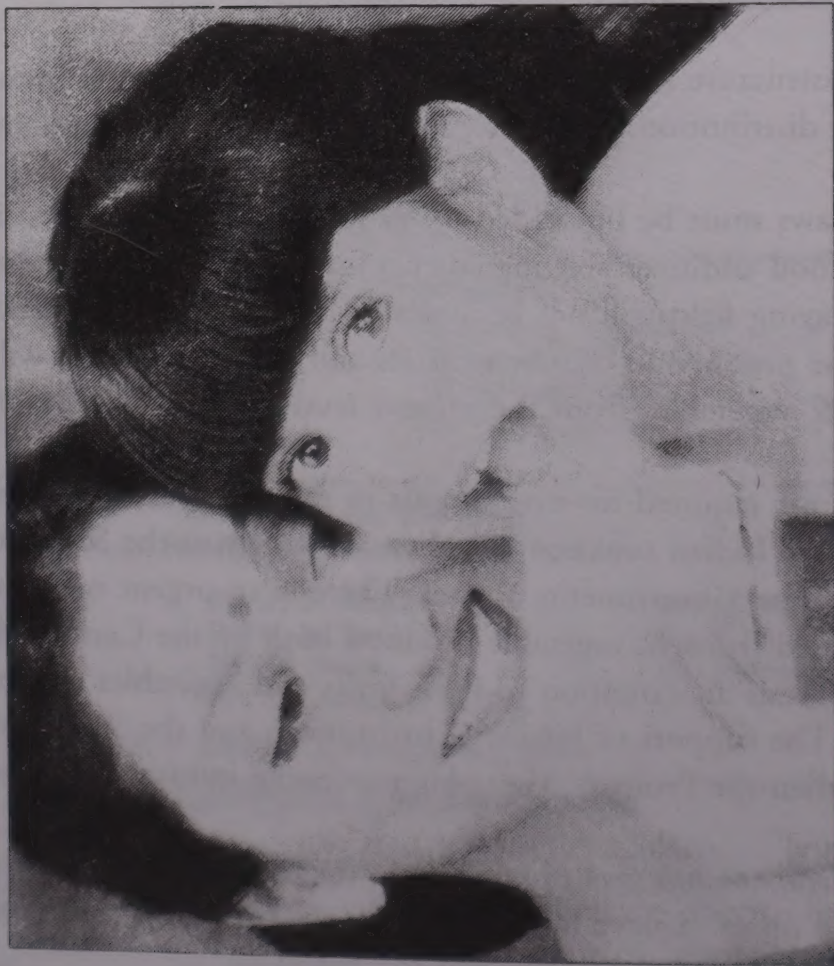
There is however an urgent need for taking effective action in the following areas if we have to ensure speedy development of Food Processing Sector which can benefit the rural based agriculturists and horticulturists.

1. Proper infrastructure has to be provided to support domestic industry right from the production to the distribution of the processed products to the consumers.
2. The food Laws must be liberalised to enable the domestic industries to produce World class products. Unless food additives and ingredients used by the foreign industries are allowed to be used in India a level playing field will not be available and the Indian producers but will not only be handicapped in the production of new varieties and quality products will also not be able to reduce wastage of fruits & vegetables from the present level of 35% to 40% of production.
3. Large funds are required for investments in the processed food sector. Bank finance is not easily available to the Indian processors as they are largely in the S.S.I.sector. There is not much support from the State Governments as well. There is an urgent need to have a policy of zero taxation on processed fruits & vegetable products both by the Central of State Governments and treat processed foods as an extention to fresh fruits and vegetables which are almost free from local and central taxes. The support of Financial Institutions and the State Governments are extremely essential to strengthen the Fruits & Vegetable processing industry.

Though the Government has given highest priority to the Food Processing sector various loopholes need to be covered up to achieve highest "GDP" growth for our country which is mainly agriculture based.



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## ASSOCIATION NEWS

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### AIFPA organises Seminar on "Opportunities for investment & trade in Food Processing Industries" in Krishi Expo-2001

The above seminar was held on 1st March 2001 at Pragati Maidan, New Delhi. It was presided over by Associations' President, Sh. Gokul Patnaik and Sh. Omesh Saigal, Secretary, Department of Food Processing Industries, G.O.I. was the Chief Guest, who also delivered the keynote address. Technical papers were presented by Dr. A. K. Bhatia from CSIR, Sh. Sabharwall from APEDA and Dr. S. K. Roy from IARI on various possibilities in developing Food Processing Industries in the country.

The Seminar was attended by about 150 delegates, mostly from the farming community, who took active part during discussions.

In his welcome speech, Sh. Gokul Patnaik mentioned about the Union Budget proposals announced by the Finance Minister on 28th Feb., 2001, which has brought great relief and cheer to the Fruit & Vegetable Processing Industries wherein Excise Duty on processed Fruit &



Vegetable products has been totally removed. He said that the credit for this goes to the Secretary, Sh. Omesh Saigal who gave wholehearted support to the pleas of the Industry. Repeated efforts of the Association have borne fruit ultimately which will help in growth of the industry in future.

Mr. Patnaik referred to the possible worry among farmers about

impending opening up of imports of agri-foods consequent to the removal of QRs from 1st April 2001. He, however, said that it should be taken as an opportunity and with the availability of good quality inputs like seeds, pesticides, water supply etc. farm productivity can go up considerably as has been

shown in some areas like grape production. He emphasised that agriculture and food processing has to be seen as one continuous chain.

Mr. Patnaik extended a hearty welcome to the Secretary and requested him to deliver the key note address.

Sh. Saigal emphasised that food processing is closely linked to agriculture and without development of food processing, farmers will not benefit. India has come a long way from the stage of food scarcity to surpluses, which needs to be protected and utilized through processing and marketed in the form the consumers want. Citing an example, he said apple whose production has gone up, can be graded into over





20 varieties. Cheaper varieties can go for processing and costly ones can be exported to get better returns. Today, nearly 40% of F&Vs grown are lost due to various infrastructural constraints and this huge loss needs to be saved through proper post-harvest management so that the farmers could benefit considerably.

Investment of around Rs. 15,000/- crores is required for processing one million tonnes of F&V. This high figure is due to the need to create various infrastructural facilities like proper handling and packaging, refrigerated transport, cold storage and efficient processing facilities. The main objective of food processing should be to ensure good return to the farmers, sufficient returns to the processors and reasonable price to consumers.

The Secretary mentioned that a Food Processing Development Policy is under way by the Govt. and investment of Rs. 1,40,000 crores will be needed over the next 10 years to develop Food Processing Industries. This is a sunrise industry and both the Govt. and the Industry will have to work hard jointly to achieve the objective.

Later, technical papers were presented by the three speakers.

In his paper, Dr. A. K. Bhatia

enumerated various processes/ machinery that have been developed in the country, which can be adopted by farmers at low cost and get better returns for their produce. He referred to modern rice mills in place of the inefficient hullers, improved and quick method of parboiling of paddy, mini wheat mill, dhal mill, quick method of ageing new rice, *chiwda* making machine, fruit toffees/bars, tamarind concentrate and powder, dry pickle, machine for splitting cashew nuts into kernel, increasing shelf life of



eggs, etc.

Shri Sabharwall referred to the vast resources and wide range of agri-products available in the country and how they can be properly stored, processed and made into attractive products. He said that there is great scope for export of these products to various countries not only to meet the requirements of Indian ethnic population there but also cater to the local people who have begun to like Indian products.

He explained the role of APEDA in this direction and the various facilities of cold storages, pack houses, etc. they have created in the country and the schemes of financial assistance available.

Dr. S. K. Roy made a slide presentation on the enormous inedible waste portion of vegetables sent to the urban market which creates problems of disposal.

He emphasised the advantages and need for developing primary processing facilities at the farm level, which can provide rural employment and also reduce transportation costs as the large bulk can be eliminated. Dr. Roy explained about the improved packages like CFBs for transporting mangoes, zero energy cool chambers for

storing fruits & vegetables which will help in reducing wastage and the need to utilize some of the less known indigenous fruits like *ber*, *jamun*, *cocum*, etc.

The farmer delegates participated in the discussions and sought clarification on various points.

At the end, Dr. A. G. Naik Kurade proposed a vote of thanks to the Chief Guest, the speakers, the delegates and the organizers.



## Sh. Dharam Pal gets AIFPA Special Award-2001

The Award is being given by All India Food Processors' Association, New Delhi to **Mahashay Dharma Pal Ji**, founder of "Mahashian Di Hatti" (MDH) for promoting Agriculture Products in India and abroad under the Brand name, MDH Spices.

On Baisakhi Day 13th April, 1919 Mahashay Chunilal Ji, father of Dharma Pal Ji came forward to give a concrete shape to his vision and started a business of spices in the name of "Mahashian Di Hatti" with a small capital in Sialkot (Now in Pakistan). In a few years, the spice became popular throughout Punjab and the Frontier Provinces and became renowned as "Deggi Mirch".

After the partition, Mahashay Dharma Pal Ji raised the banner of "Mahashian Di Hatti" in Delhi starting with manually ground spices. Now the demand for MDH has been going high throughout India and abroad through a network of

over 2000 stockists and over 5 lac retail dealers.

MDH has received a National ITID Quality Excellence Award given by Shri Pranab Mukherjee, former Union Minister of Commerce.

In spite of being occupied with production and expansion programmes of MDH, Mahashay Dharma Pal Ji established a 250 Bed "Mata Chanan Devi Hospital at New Delhi and Educational Institutions like Sr. Sec. Schools, Hari Nagar, Subash Nagar, Day Boarding School, Janak Puri, New Delhi and also offering scholarships to the various organisations like Arya Samajs, *Gowashalas*, 'Gurukuls', and *Ashrams* etc.

MDH has been publishing a monthly magazine entitled "Sandesh"



to propagate the values of ancient tradition of "Dharma and Culture" in family and social life in the present day world.

In recognition of Mahashay Dharma Pal Ji's exceptional services towards Agriculture promotion, AIFPA presents a Memento and this citation to Mahashay Dharma Pal Ji in **Krishi Expo-2001** at Pragati Maidan.

This Award has been presented by Shri Omesh Saigal, IAS, Secretary, Deptt. of Food Processing Industries, Govt. of India, this 1st day of March, 2001 at New Delhi.

## AIFPA bids Farewell to Shri Omesh Saigal

All India Food Processors' Association had organised a get-together on 9th April 2001 at the Indian International Centre., New Delhi to bid farewell to Shri Omesh Saigal, I.A.S. on his retirement as Secretary, Department of Food Processing Industries, Government of India.



Shri. Gokul Patnaik welcomed Shri Saigal and eulogised the valuable contribution made by him towards the development and growth of Food Processing Industries in India during his short tenure in the Department. The exemption of excise duty on processed Fruits & Vegetables announced in the Union Budget for 2001-



2002 is in no small measure due to the efforts made by Shri Saigal. Shri Patnaik said that although Shri Saigal has retired from the Secretaryship, the Industry was glad to know that Shri Saigal has assumed the Chairmanship of the National Task Force on Food Processing Industries set up by the Government.

Mr. Patnaik presented a bouquet and a memento of silver plaque to Shri Omesh Saigal as a small token from All India Food Processor's Association.

In his reply, Shri Saigal mentioned

the learning process he went through during interaction with All India Food Processors' Association and other trade bodies as also with individual representatives of various Food Industries. He referred to the vast scope for growth of this sector and the tremendous employment potential it offers. He mentioned about the Processed Food Development Bill which has been drafted by the Department for the allround development of the Food industry. The Bill envisages the creation of a separate Processed Food Authority of India which will look

after all aspects relating to the Industry. Shri Saigal said he was glad that in his new assignment as Chairman of the Task Force, he would continue to have interaction with various bodies connected with the Food Industry.

Shri Saigal thanked the President and Members of All India Food Processors' Association for arranging the get-together and the memento presented to him.

A lunch followed the felicitation function.



### DFPT GETS NEW SECRETARY

Sh. D. P. Tripathi has taken over as Secretary, Deptt. of Food Processing Industries, Ministry of Agriculture, Govt. of India. AIFPA welcomes him and looks forward to active interaction with him in the joint efforts for the development and growth of Food Processing Industries in India.



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## NEWS ROUNDUP

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### Talks on to acquire transgenic rice tech

The Department of Biotechnology in consultation with the Indian Council of Agricultural Research (ICAR) is negotiating with a Swiss group to acquire the technology to produce transgenic rice, which is claimed to reduce vitamin-A deficiency and iron deficiency. However, the deal will be struck only if all conditions are favorable.

The above move is part of a larger drive to introduce transgenic plants which are considered pests and herbicide resistant and therefore necessary to combat the dependence on strong pesticides and fertilisers. The initiative is also based on the recommendations contained in the seventy-fourth report of the Committee on demands for grants (2000-2001) of the Department of Biotechnology.

Towards this, the department is supporting efforts by the National Centre for Plant Genome Research in New Delhi to introduce a storage protein found in amaranthus into potato, as the protein contains a higher level of essential amino acids than recommended by the World Health Organisation. These plants

are now being tested in collaboration with the Central Potato Research Institute in Shimla.

An action taken report on the recommendations by the Committee presented in the Rajya Sabha also cited a multi-institutional project on wheat improvement through the tagging of four genes responsible for protein content, quality grain hardness and pre-harvest sprouting. Another department-sponsored programme on hybrid seed development in oilseed crop, Brassica Juncea, has produced transgenic plants, which will soon be subjected to field trials in collaboration with ICAR.

*Economic Times*

16.12.2001



### Milk output expected to touch 81 mt

Despite reduced fodder availability stemming from drought conditions for the second year in a row in the major milk producing western States, strong private investment in dairy facilities is expected to support increased milk production.

India's milk production in 2001 is forecast at 81 million tonnes and estimated at 79 m.t in the current

year, according to the US Department of Agriculture (USDA). Currently, the registered processing capacity stands at a total of over 60 million litres per day.

To meet the growing demand for milk in urban areas, a rising number of small dairy processing facilities are being established. Increased dairy processing capacity has led to a stronger demand and higher farmgate prices for raw milk, encouraging dairy farmers to expand milk production and improve their feeding and maintenance practices.

Improved profitability and increasing commercialization of the dairy sector have led to an increased use of compound feeds estimated at six m.t. in 1999, compared with 5.5m.t. in the previous year.

Continued expansion of milk processing capacity by the private sector coupled with the need to sustain fluid milk supplies during the lean season and comparatively higher prices in the current year had led to an increase in total milk powder production estimated at 2.75 lakh tonnes in 2000, up from 2.4 lakh tonnes in 1999, the USDA report said.

*Processed Food Industry*

Dec.2000.





## Banana producers can make blood pressure claims

Banana producers can claim that their fruit reduces the risk of blood pressure and stroke because they contain potassium and are low in sodium, an industry group said. The international Banana Association said the Food and Drug Administration (FDA), which monitors health claims, had approved a label saying "Diets containing foods that are good sources of potassium and low in sodium may reduce the risk of blood pressure and stroke" for bananas sold in the United States.

"We can now confirm that there is a direct health correlation between banana consumption, potassium intake and low blood pressure," Mr. Tim Debus, vice president of the association, said in a statement.

Earlier this week, orange juice maker, Tropicana Products Inc., a division of drinks giant, Pepsi Co Inc., said its products could also carry the claim.

Processed Food Industry

Dec.2000



## HP to Promote Fruit-based Wine Industry

Himachal government has taken a decision to promote fruit based wine industry in Himachal Pradesh for opening a new avenue of value addition to the horticulture industry. The wine industry would be

established in the joint sector in collaboration with the renowned wine manufacturers, Indage Group of Companies, Mumbai. The joint sector venture has been registered as Himachal Indage Private Limited.

Addressing newsmen at a press conference in Shimla on Monday 4th September. Horticulture Minister Mr. Narender Bragta said that the company would establish two wine industries in Shimla and Kullu districts.

He said that the sites for setting up the units were under finalisation adding that the techno-economic feasibility report for the establishment of the winery projects are under preparation. Mr. Bragta disclosed that with a view to protect the interests of the apple growers of Himachal Pradesh from competition from imported apples, the matter had been taken up seriously with the Government of India (GOI). As a result the import duty for imported apples was increased by GOI from 35% to 56%.

Processed Food Industry

Dec. 2000



## India Aks China To Lift Ban On Fruits, Vegetables

China had put India on the list of countries it had banned from exporting fruits and vegetables to the vast Chinese market. A strongly worded letter was sent to Beijing to that effect. The note, has demanded

permission for entry, exit, inspection and quarantine to Indian products, the official said. It also sought Beijing's compliance with its commitment made during bilateral trade negotiations on China's entry into the World Trade Organisation (WTO).

Accusing the Chinese side of vacillating on a decision to send an official delegation to India for inspection of sanitary measures, the official said they had repeatedly met Chinese officials for early action on the matter.

China imposed blanket ban 15 years ago after quarantine officials found 'fruit flies' in a consignment of mangoes. New Delhi's concern over China's inaction on a written deal with India comes amid reports that the US and EU are seeking clarifications and implementation of WTO agreements signed by China with 36 members of the body, including India.

As per the Sino-Indian pact, signed during the visit of commerce and industries minister Murasoli Maran in February this year, the two sides agreed to exchange information on the issue.

Ben. & Food World

Dec-2000



## Food Standards Body in UK

The ministry of Agriculture, Food and Fisheries in UK has setup Food Standard Agency, a single organisation responsible for all aspects of food safety and standards.



The functions of the FSA is to advise the public and government on food safety, nutrition and diet, protect consumers through effective enforcement, monitoring and support consumers choice by accurate and meaningful labelling.

Having consumers interest in relation to food safety is the legal remit of FSA which is defined in an Act of Parliament. The Agency is an independent body and it can publish its advice to the government. The FSA has three main groups. 1) Food Safety Policy group, 2) Enforcement and Food Standards group and 3) Corporate Resources and Strategy.

Bev & Food world

Dec-2000



## Safe Fruit Packaging

Fruits are highly perishable commodities and are easily damaged on transportation. The Department of Horticulture in Andhra Pradesh and the Indian Institute of Packaging (IIP) have together developed a safe packaging for tomatoes, which can considerably reduce damage during transportation.

The boxes are made of corrugated paper and are available in two shapes, rectangular and hexagonal. Also these boxes provide higher compression strength so that crushing of tomatoes is avoided. The boxes can be kept one above the other, making bulk transportation easier. Taking into account these advantages, the Departments of Horticulture will go into massive

production of these boxes soon.

IIP has also developed an innovative packaging system for 'chikoos' with an outlook to export. The model was presented in a seminar organized by the Agricultural and Processed Food Export Development Authority (APEDA) in Navsari, Gujarat. The packaging has been designed as 'Display Retail Packages' (opening and ready for display).

Besides, the thermoform individual cavities do not let two fruits touch each other thereby reducing damage on transportation. The 'chikoo' packaging has been developed from corrugated paper boxes and bamboo so that the boxes have a sophisticated look and better display values.

The field trials conducted clearly showed that damages due to the transportation was reduced to 3-4 per cent. Earlier it had been around 15 per cent.

Bev. & Food World

Dec 2000



## Food Biz to Touch Rs. 7,500 Cr in 5 Years in India.

People in India spend more than half their income on food, the Indian Food market is Rs 3.50 trn but organised food retail is just one percent of the total food sales. The global average is 53 percent.

A recent study conducted by

finance company Rabo India which specialises in the food and agri business has projected the Indian organised food retail business to grow 12 fold to Rs. 7,500 crore over the next five years. The projection is based on a conservative estimate that the target segment for organised retail is 6 m households or 25m people assuming that 20 percent of households are earning above Rs 1.5 lakh per annum. Even if this segment spends Rs. 1,000 per month through organised retail, then reaching the Rs 7,500 crore mark will not be difficult, feels Sapna Naik, manager, research, food and agri-business and the one responsible for preparing the research report.

There have been several reasons inhibiting investments into the sector by both Indian and multinationals. These have been related to regulatory policies, consumer needs and perceptions and most importantly the length and complexity of the supply chain, particularly for fresh produce and branded commodities.

Till recently, foreign investment was not permitted in this sector. But it is now permitted upto 100 percent in cash and carry formats.

The report goes on to say that till recently, the target segment principally sought price and not attributes such as quality, ambience, convenience as the decision parameters for buying. Media exposure, nuclear families and emancipation of women are some of the important demographic reasons for shifting the decision



making variable away from price alone. Players in food service and food distribution will provide the building blocks for supply chain for food retail chains.

This momentum will help the development of other key segments of food retailing namely fresh produce and staples.

However, high real estate costs, plethora of value added services and overloaded rail and road networks have until now led to an almost negligible presence of the organised India retail industry in the most industrialised western part of the country-Maharashtra and Gujarat.

Bev & Food World

Dec 2000.



## World Rice Output to decline in 2000-01

According to the US Department of Agriculture (USDA), world rice production for 2000-01 is forecast at 400.6 million tonnes, down nearly 4.4 million tonnes from last year's output, reflecting from the production of early season rice in China and in some countries in South America, resulting from lower world prices compared to last year. South East Asia has increased production despite early season weather difficulties. The six countries-Indonesia, Vietnam, Thailand, Burma, the Philippines, and Cambodia-are forecast to produce a record 90.8 m.t. in 2000-01, marginally up from the previous year. Over the past 10 years, South east yields had increased

by more than eight percent, but the biggest factor in production growth was the expansion in area, up nearly 13 per cent as farmers had turned to high-yielding varieties, applied more fertilizer, pesticides and improved irrigation systems. Yield improvement and area expansion in Southeast Asia have moved this group of countries into a single block that produces more than a fifth of the world production.

India Grains

Jan.2001



## IRRI develops 'Golden Rice'

The International Rice Research institute (IRRI) is developing a transgenic, high-yielding rice variety that is rich in Vitamin A and will be available for large-scale cultivation in the next three years. Christened as 'golden rice', the new variety involved introduction of a gene leading to biosynthesis of  $\beta$ -Carotene, the precursor to Vitamin A, Dr Khush, who heads the bio-chemistry division at IRRI, told the 33rd annual conference of Nutrition Society of India (NSI). IRRI was also engaged in the development of rice varieties rich in iron and zinc and was using modern breeding techniques to modify plant architectures to raise the yield potential to 12 tonnes per hectare. With population explosion putting stress on available resources, particularly in the Asian countries, there was a need to adopt new biotechnology and genetic engineering strategies to meet the growing food

needs. The Vitamin A-rich rice could be of immense help in tackling nutritional deficiency, Dr Khush said.

India Grains

Jan.2001



## Mandatory ISI mark on Bottled Water labels by March-end

The notification issued by the ministry of health on September 29, which was also an amendment to the Prevention of Food Adulteration Rules, 1955 would give time till March 29, for complying the act making it mandatory for all companies producing bottled water to put the ISI mark on the label.

The notification defines 'packaged mineral water' as water derived from any source of potable water which is subjected to treatment such as filtration, activated carbon filtration, demineralisation and reverse osmosis.

According to a senior official of the Bureau of Indian Standards (BIS), only six companies till date have received BIS certification for packaged mineral water.

The Visakhapatnam-based Life Line Aqua secured the certificate recently. The others are : Hyderabad based Uma Beverage (Fresh), Calcutta- based West Bengal Chemical Industries (Life Line), Guntur-based Sapphire Spring (Sapphire), Delhi based Blue Life Aqua Products (Blue Lite) and Khodiyar Beverages (Khodiyar). However in case of 'natural mineral



water', BIS has not given a single certification, sources said.

*Processed Food Industry* January 2001



## Govt. to prevent dumping of imported food

India had already imposed a 100 per cent import duty on cutmeat and 60 per cent on powdered milk to prevent dumping of imported food products, said Mr. Nitish Kumar, Union Agriculture Minister.

He said the government had taken several policy initiatives to speed up the growth of processed food sector. These include provision of financial assistance in the form of soft loans and grant to the private industries, public sector undertaking, non-government organisations and cooperatives. Such assistance was also available for creation of infrastructure facilities.

He said the food processing sector could generate substantial additional employment capacity. An investment of Rs. 1,000 crore in this industry could provide employment to some 54,000 persons.

He reiterated that government has prepared an approach paper on a Processed Food Development Act on the basis of suggestions received from various quarters in four regional seminars held for this purpose. The general consensus formed is that besides national policy on food, an

appropriate development oriented legislation be conceived to replace the present laws which were impeding the growth of this sector.

*Processed Food Industry* January-2001



## New edible film preserves and adds flavour

An edible film made from strawberry puree can add flavour to a banana and help keep it fresh as well, according to research presented during the 2000 International Chemical Congress of Pacific Basin Societies being held in Honolulu.

The report claims that film wraps made from broccoli, oranges, carrots, strawberries and other fruits and vegetables can be good and tasty oxygen barriers.

The achievement is being attributed to the naturally occurring sugars in the fruits and vegetables. These films are meant not to replace synthetic packaging, but may be to simplify it. They could help make the wrap recyclable and the film looks like a sheet of paper opaque and orange, if it's made from carrots, for example. From a marketing standpoint, it would be a new and fun way to sell fruit and vegetable products while providing the added benefit of improving shelf life and quality.

*Processed Food Industry* January. 2001



## Round Table Discussion on Rationalisation of Prevention of Food Adulteration Act 1954

The Food Regulatory Council of CII held a round table discussion with the Consultant, ministry of health (Ex-Law Secretary, Government of India) to discuss rationalisation of Prevention of Food Adulteration Act 1954.

The participants were major players in the industry-Hindustan Levers, Marico Industries, Smith Kline Beecham, Nestle India, Coca Cola India, Pepsi Foods, Indian Confectionery Manufacturers Association, All India Food Processors' Association and others.

Some of the changes suggested were:

- 1) Change in the title of the Act
- 2) Change in the composition of the CCFS
- 3) Accreditation of laboratories analysing statutory samples of foods.
- 4) Providing statutory method of analysis under the law.
- 5) Providing one part of the sample to the vendor
- 6) Sending information of 'Nominee' to Food [Health] Authority in place of "Local [Health] Authority"
- 7) Deletion of clause where 'Public Analysts' report is superceded by certificate of "Central Food



Laboratory" and for providing equivalence to certificate of Central Food Laboratory

- 8) Gradation of penalties based on 'economic benefits' with no injurious effect and authorising courts to levy penalty with no minimum imprisonment or fine but depending on the merit of each case and nature of offence
- 9) Providing 'Compounding' by a competent authority for minor technical offences like labelling etc. which are non-prejudicial to the consumer.
- 10) Providing a 'hearing' of the 'so called accused' before sanctioning legal prosecution.
- 11) Providing a maximum time limit of 6 months for launching prosecution from the date of sampling

The suggestions were well received by the Consultant who promised to give due consideration while making his final report to the Ministry of Health.

*Journal of CII* Jan-Feb 2001



## FDA's HACCP rules for fruit and vegetable juices

The U.S. Food and Drug Administration announced a final rule designed to improve the safety of fruit and vegetable juice and juice products. Under the rule, juice processors must use Hazard Analysis

and Critical Control Point (HACCP) principles for juice processing. Implementation of a HACCP system will increase the protection of consumers from illness causing microbes and other hazards in juices.

The rule comes after a rise in the number of food borne illness outbreaks and consumer illnesses associated with juice products during the past several years.

The juice HACCP regulation applies to juice products in both interstate and intrastate commerce. Juice processors will be required to evaluate their manufacturing process to determine whether there are any microbiological, chemical, or physical hazards that could contaminate their products. If a potential hazard is identified, processors will be required to implement control measures to prevent, reduce, or eliminate those hazards. Processors also are required to use processes that achieve a 5-log, or 100,000-fold, reduction in the numbers of the most resistant pathogen in their finished products compared to levels that may be present in untreated juice.

*Processed Food Industry* Feb-2001



## New Bacteria - detecting device gets Canadian patent

A new food safety tool has been patented in Canada, according to a report from the Canadian Press. The

device, known as the rotary thermocycler, is said to detect and count bacteria in food samples, testing for bacterial contaminants in water and counting microbes in soil.

The system, which resembles a multi-disc CD player, will produce cell counts of specific bacteria in just two hours. Its discshaped filters, on which bacteria have been trapped, are processed through several cycles of different temperatures and reactive conditions. The results then appear as spots on the filters. And electronic camera records the number of spots and calculates the cell count.

*Processed Food Industry*

Feb-2001



## Soybean chemical can prevent mouth cancer

USA : Researchers in California have determined that a chemical derived from soybeans can help prevent oral cancer or cancer of the mouth.

Scientists at the University of California at Irvine in their study based on human research, showed that the soybean derivative can play such a role in oral cancer prevention.

The soybean derivative studied is a chemical, scientists call the Bowman-Birk inhibitor. The chemical though identified almost four decades ago, is said to reduce the size of pre-cancerous lesions in the mouth which can lead to oral cancer.



"This study shows that it may be possible to stave off the development of leukoplakia and therefore prevent more cases of oral cancer from occurring," Dr. Frank Meyskens, director of a university cancer center and a leader of the research team, said. The pre-cancerous lesions in the mouth are called oral leukoplakia.

*Processed Food industry*

*Feb-2001*



## **Ministry clarifies stand on PFA**

New Delhi: Health ministry has clarified that it has not rescinded the rules on compulsory labelling of packaged food containing nonvegetarian ingredients, as reported in a section of press. Denying use of any "common stalling tactics", as claimed in some media reports, to prevent the implementation of the rules, the ministry said the matter was referred to the committee of secretaries by the department of food processing and not by it. The government had issued a notification on May 17 last year regarding amendment in the Prevention of Food Adulteration (PFA) rules. The notification stipulated that all packaged food products containing non-vegetarian ingredients should be labelled.

*Economic Times*

*23-2-2001*



## **Loopholes in the 'Made in Videsh' label**

NEW DELHI :Firang isn't always the finest. Next time you reach for imported baked beans, sausages, tinned tuna, choco pie and apple paste in the glitzy super-market, just do a stock check. It could be old, outdated, contain questionable flavours, colours, oils and could be overpriced too. The findings of a study sponsored by the Ministry of Agriculture and Department of Food Processing Industries and conducted by a consumer rights organisation indicate gross violation of several food laws by several such imports.

So take a look at the label on the packet and find out whether it gives complete information about the product. In the survey, 457 products made in 60 countries were purchased from nine markets in and around Delhi and examined by food and consumer rights experts. According to the study, 81 percent of the food samples that were examined violated rule 32 of the Prevention of Food Adulteration Act. The rule makes it mandatory for every package of food to carry a label detailing the description of the food, the ingredients and flavourings used with their weights and volume, the date of manufacture and expiry (in capital letters), the name and complete address of the manufacturer.

Twenty-five percent of the samples did not mention the manufacture and expiry date which is a serious violation of law. Twenty-two percent of the samples did not give a separate declaration on the package about use of flavours, colours and vegetable fats as required under the provisions of law. And 64 percent of the products imported did not carry the maximum retail price, which is compulsory as per the Standards of Weights and Measures Rules, 1977. This is again the responsibility of the importers as per the provisions of law. The country of origin was not mentioned on 12 products and 10 food samples did not carry English translations on them.

The report titled "An Evaluation Study on the Implementation of National Laws on Packed Food Products" was conducted by Voluntary Organisation in Interest of Consumer Education (VOICE). "The food samples were examined in four categories: confectioneries, beverages, meat and value added food products like noodles, pasta, macaroni, spices and soup powder," said study-in-charge Bejon Mishra. "The laws that were considered in the examination of the products included, Prevention of Food Adulteration Act, Packaged Commodity Rules (1977) and Fruit Products Order (1955)."

The report highlights the "helplessness of consumers" due to lack of infrastructure to process complaints and prompt redressal.



The government should make it mandatory for all importers to give an undertaking at the time of import that they comply with the provisions of the Packaged Commodity Rules (1977) and should obtain an undertaking from the foreign exporter that the product meets the requirements of quality prescribed in Indian Food Laws, the report recommends.

*Times of India*

10-3-2001



## Israel offers Punjab joint ventures

A two-member delegation led by Mr David Aphek, Ambassador of Israel to India, called on Chief Minister Parkash Singh Badal here this evening and offered collaboration and setting up joint ventures with Punjab in agriculture, food processing, agro industry, development of livestock, drip irrigation and other projects involving hi-tech industrial techniques.

The Chief Minister told the visiting dignitaries that concerted efforts are being made to industrialise the agricultural economy and undertake self-employment ventures.

The Chief Minister said he had visited Israel and studied various aspects of development and discussed with the Israel Government collaborations in different fields.

He said the Khalsa Heritage Complex at Anandpur Sahib has been designed by an Israeli architect, Mr Moshe Sefdi.

The Ambassador said agriculture, dairying and industrial sectors are the main economic sectors of Israel, besides livestock development.

He said his government is paying special attention to improve animal husbandry as a modern intensive sector, increase the number of heads of high productivity pure and crossbreed animals and expand combined fodder industry.

He said Israeli soils are generally of high fertility suitable for various crops, including fruits and vegetables. The agro processing industry is an important sector and he offered to set up projects in Punjab. He said that since Punjabi farmers are known for their enterprising spirit and hard work, they can be motivated to collaborate in the farming sector and other allied activities with Israel which can fetch more income for them.

The Chief Minister said that the most important project for the state in which experts and private companies can help is to conserve introducing drip irrigation in the state. It has become all the more important this year as there was not enough rain and the ground water level has gone down. He said state officers will be in touch with the Embassy and the Government of Israel for pursuing the proposals of collaboration.

Jathedar Tota Singh Education Minister, and Mr Ramesh Inder Singh, Principal Secretary to the Chief Minister, were also present at the

meeting, according to an official release.

*Tribune*

22-3-2001



## Biscuit makers plead for roll-back of excise duty

The Federation of Biscuit Manufacturers of India (FBMI) today urged the Union Finance Minister, Mr Yashwant Sinha, to roll back the excise duty on small biscuit packs.

The recent Budget had imposed a 100 per cent increase on the excise duty from eight percent to 16 per cent on biscuit packets up to Rs.5 for 100gm.

Mr Nikhil Sen, Prisedent, FBMI, presenting the industry's case to presspersons said that biscuits were both a product of mass consumption and 70 percent of a biscuit was 'maida', " Whichever way one looks at it, whether it was a product of mass consumption, or whether it had agricultural inputs, biscuits fit the bill in both ways."

The rural penetration of glucose biscuits was about 20 per cent and these were some of the reasons why excise on small packs was left at eight percent in the last Budget, even as excise on premium products was raised to 16 per cent.

Referring to the total excise exemption that the Budget granted to jams, jellies, wafers and sauces,



Mr Sen said, "While this is laudable, one cannot escape the fact that these are basically luxury items aimed at the upper income groups. Even after the excise exemption, a 700-ml bottle of squash costs Rs 51, a 500gm of jam costs Rs 48 and a 500gm tomato ketchup bottle at Rs 49". This stand compared to Rs 4 for a 100-gm glucose biscuit packet and this price had not gone up for the last five years, he said.

Throwing light on the untapped potential of the biscuit market Mr Sen said, of the 40 million tonnes of wheat in the godowns, about 20 per cent was lost through pilferage and rodents menace. And unlike developed markets, where consumption was about 12kg per capita, consumption in the domestic market stands at 1.2 kg per capita, he said:

Industry representatives expressed their inability to understand the rationale behind clubbing biscuits with products such as chocolates and jellies. "Last year the small pack biscuit, with an excise of eight per cent and other premium biscuits at 16 percent excise showed a stagnant or declining trend. This indicated that biscuits are highly price sensitive".

The organised sector with an estimated 5,50,000 tonnes and a raise in prices would cause a disproportionate drop in demand. The manufacturers were, however, non-committal on whether an increase in price was on the anvil or

whether the manufacturers would absorb the costs.

*Business Line*

21 March 2001



## Policies for food processing industry soon

The Karnataka government will frame policies to supplement the centre's proposed Processed Food Development Act in order to prevent the perishing of farmers produce like fruits and vegetables, and facilitate the growth of food processing industry in the State.

Minister of State for Horticulture Allam Veerabhadrapa, replying to a question raised by P Ramaiah (independent), told the Legislative Council today, that the Union agriculture minister had informed him about the proposed Processed Food Development Act.

"The Act is likely to be passed in the current Parliament session and the State government will frame necessary policies," he added .

Food Processing Parks will be established at five districts - Bagalkot, Kolar, Mandya, Chitradurga and Belgaum.

The government had proposed to invite private participation for setting up similar parks in other parts of the State, he said.

*Deccan Herald*

22 March 2001



## Food processing industry to get tax exemptions

Trying to give a further push to the food processing industry, the Union government has now asked state governments to consider sales and trade tax exemptions.

This comes on the heels of the finance minister's announcement during the Budget presentation, that the government would not levy excise duty on processing in dustries based on fruit and vegetable preparations. And , it said , it would give incentives for industrial parks, including food parks.

The latest request from Union agriculture minister Nitish Kumar to states is an attempt to rationalise the entire duty structure. Sales and trade tax account for about 12 percent of the burden on the industry, yet collections are nominal-exemptions, says Kumar, could spur investments running into thousands of crores in a state.

Food processing is now a priority attention area for the government, the target being to increase processing levels from the present woeful two percent to at least ten percent in ten years.

The steps now recommended would not just create the essential enabling environment but ensure an investment of Rs. 1,40,000 crore in the entire food chain. Such resource mobilisation will be needed if



farmers are to get remunerative prices.

*Times of India*

22 March 2001



## Food packets to specify category

The government has said packaged food would have to specify whether its contents were vegetarian or non-vegetarian.

Packaged food would also have to carry symbols on its labels, like green for vegetarian and red for non-vegetarian, clearly defining if the ingredients are vegetarian or otherwise. The Cabinet decided to approve this amendment to the provisions of the Prevention of Food Adulteration Rules, 1955, last night, thus accepting a long-standing demand of the RSS.

My Pramod Mahajan said today all imported food packets would also come under the amended food adulteration rules. He was referring to the increase in imported foodstuffs after all quantitative restrictions are removed from 1 April.

The government decision has also defined non-vegetarian and vegetarian food for the purpose of printing symbols. The amendment was necessitated following reports that traders had been mixing tallow with tea, otherwise eminently vegetarian. This had sparked off a major controversy in the packed food market.

Mr. Mahajan said the printing of symbols, probably red and green, would be mandatory after six months from the date of publication of the notification, to give manufacturers time to print new packaging labels.

*The Statesman*

22 March 2001



## Apeda aims increasing food exports to Rs 9,500 crore

The Agricultural and Processed Food Products Export Development Authority (Apeda) is aiming at a total food exports of around Rs 9,500 crore this fiscal. It has also taken a series of initiatives to raise it beyond the Rs 10,000 crore mark in the coming years.

"We are aiming at a 25-per cent growth with the total exports of Rs 9,423 crore in the current fiscal and to cross the Rs 10,000 crore annual export mark in the long term, we have taken up a number of measures like developing cold chain infrastructure, cargo handling facilities and trading through Internet," a senior Apeda official said here.

To enhance the processed food exports and reduce wastage an investment of over Rs 75,000 crore was required in cold chain infrastructure and Apeda was currently focussed in fulfilling this need, he said.

Though the requirements were huge, the authority was operating a number of financial assistance schemes to address the need of

setting up pack houses, cold storage, pre-cooling chambers and refrigerated vans, he added.

The official said Apeda had itself initiated and executed a number of quality and infrastructure related projects and had set up cargo handling facilities (CHF) for perishables in New Delhi, Chennai, Hyderabad, Bangalore and Triruvananthapuram. A state of the art facility was also being set up at Mumbai airport which is expected to be ready by March next year, he said.

Realising the need to set up CHFs at sea ports, Apeda had obtained a berth in Kandla and the project would be completed by next fiscal, he added.

Apeda had also developed R & D protocols for export of fresh fruits and vegetables by sea, because air freight rate had been increasing every year, the official said.

Since some competing countries had developed technology for export by sea containers at low freight cost it had resulted in Indian produce suffering in the international market, he said.

Nevertheless, it was significant that exports of fruits and vegetables and processed fruits and vegetables had clocked a 26.58 per cent and 20.36 per cent growth respectively during April-Nov 2001, the official said.

To further accelerate this growth, Apeda had conducted trial experiments, by sending controlled



atmosphere containers of mangoes to Europe and a laboratory had been set up in Pusa for further applied research, he added.

Apeda, he said, had also planned to set up auction centres in flower growing areas to encourage floriculture exports and the first such centre would come up at Bangalore in association with Karnataka Agro Industries Corporation.

*Financial Express* 23 March 2001



## Indian snacks may eat their way into American market

For all those pushing the panic button, fearing that come April 1 and the removal of quantitative restrictions (QRs), French fries will oust the friendly neighbourhood samosa stalls, here's some food for thought -Indian exports of snack foods to the US are three times that of US snack food exports to India.

Mr Joseph M. Carroll, the US Department of Agricultural Attache for India, Bangladesh and Sri Lanka, told *Business Line* that the US was looking to level the agro-trade between the two countries.

For, while the US contributed less than five per cent of the Indian agricultural imports, India contributed about 15 per cent of the imports into the US.

"But there is no need to push the panic button because even as

French fries look to penetrate the Indian market further in the next couple of years, Indian snack foods to the US are also growing. In fact, while US companies see opportunities in niche and branded food segments, the removal of quantitative restrictions could also open up opportunities to domestic producers, who will be exposed to different products and can start manufacturing them locally."

He cited the Kelloggs example as a case in point where similar products were manufactured locally, following Kelloggs hi-decibel entry on the scene.

"The flip side to the removal of QRs is the opportunity that opens up for domestic manufacturers, both locally and abroad," he said.

He said American food companies were evincing interest in potential areas like wines, fruits and raisins and, of course, potato, with the US Potato Board looking to promote the "versatility of potatoes". The US-based Lam Western is selling its French fries through an Indian outfit, but the sales have been largely institutional till date.

He said 2002 would see French fries moving out from elitist institutional sales, and move into the retail markets.

The dairy segment is also an area of interest. Though, at the moment, Indian dairy exports to the US (at \$21 million) is more than 50 times greater than the US dairy exports to India, at \$4,00,000, he said.

Bilateral trade between the two

countries in agriculture was valued at \$1.4 billion last year or an estimated Rs 6,500 crore, he said.

Last year, India's agricultural exports to the US were valued at \$1.1 billion, nearly eight times larger than the US commercial agricultural exports to India, an estimated \$145 million.

Cashews take the top slot in Indian Agriculture exports to the US, valued at \$250 million, at zero duty, even as almonds are the top US Agexport to India, valued at \$70 million or Rs 35 per kg.

Despite being the World's largest importer of pulses, India enjoys a trade surplus with the US in exports of dried beans and lentils. In 2000 the US was the world's largest exporter and importer of agricultural products, with exports of \$51.6 billion and imports of \$39 billion.

Cold statistics notwithstanding, "the consumer should celebrate the removal of QRs, for it will bring in many more product at competitive prices", he concluded.

*Business Line* 23 March 2001.



## Water, water everywhere, not a safe drop to drink!

Do packaged water brands pose a risk to your health? The government had asked bottled water manufacturers to conform to quality standards in September last year. Six months later, on the eve of the



March 29 deadline, one finds that just a handful of the brands in the market-estimates vary between 750 to 5,000 brands of bottled water- have done so. Not only have most water bottlers failed to certify their products, they are lobbying for an extension of the deadline to certify their products.

Ten companies, including Pepsico India, Lifeline Aqua, Blue Light, Sapphire, Uma Beverages and Khodiyar Beverages and Khodiyar Beverages in the packaged water category and Himalayan and G C Beverage in mineral water category, have passed the quality norms. The rest are hoping to push back the deadline. Interestingly, Bisleri the market leader with close to 70 percent share of the Rs 700-crore branded water industry, and Kinley, Cokle's brand, do not yet make the grade.

Bottled water manufacturers have roped in CII to lobby with the ministry of health, which issued the notification which makes it mandatory for water brands to carry the Bureau of Indian Standards (BIS) mark. These manufacturers want the ministry to extend the deadline and to do away with the annual marking fee of Rs 1.49 lakh or Rs 25 per 1,000 liters of water sold whichever is higher. Three days ago, a meeting was also held with the department of food processing industries to request them to take up these issues on behalf of industry with the ministry of health.

"The industry says it can fulfil all the standards laid down by BIS, but not within this timeframe," says CII. "The marking fee is too high. The FPO mark is also required but no fee is charged for this. Why should BIS then charge such high fee," asks Bisleri director Sethi. He says BIS is dragging its feet over processing applications and should extend its deadline. Coke's spokesman had the same pitch: "Inspections were carried out and we were asked to install extra equipment, which we did. But there appears to be some procedural delays within the BIS because of which we have not got our certification yet," he says.

*Economic Times*

23-3-2001



## Foot and mouth disease gives jolt to meat exports

The reported outbreak of foot and mouth disease in parts of India is taking a toll on Indian meat exports. Though only a few cases have come to light, Egypt, one of largest consumers of meat from India, has joined hands with Saudi Arabia to ban meat exports from India with effect from March 20. Meat exporters are now trying desperately to pull their consignments out of Jawaharlal Nehru Port, which handles a majority of reefer containers.

According to officials from the department of animal husbandry under the agricultural ministry, the

countries from middle east have become extremely cautious about Indian export. "They have clamped stringent hygiene measures, and all Indian consignments are subject to severe quality checks at all the ports in middleeast," said a senior official from the ministry.

Market sources said Egypt had overtaken the other two major markets ---Malaysia and Philippines- in terms of volume over the last three-four months.

India's sudden surge in meat export to Egypt followed the appointment of 7-8 licenced exporters in India by the Egyptian government for exports to India. Egypt accounts for around 120-140 forty-foot equivalent container units (FEUs) per week. In 1999-2000, India's total meat exports were about 10,000 FEUs, and most of which were directed to west Africa, Malaysia, Philippines and Egypt. Europe and the US have banned India's meat exports into their country for a long time, and the recent ban on meat imports imposed by the US will not affect India, said market sources.

All major meat exporters in the country--Hind Agro-foods, Al Kabeer, Allana Sons, Arabian Exports, MK Overseas and Fair Exports--are believed to be making alternate plans to save their export consignments.

*Economic Times*

23-3 2001





## Saying it with fruits

Karnataka has been identified as an important market for horticulture products by NDDDB. This is because of the rapid rise in production of various fruits.

Karnataka's WTO cell report has stressed the need for the state to focus in promoting certain horticultural produce. The state has for long been considered the "coffee basin" of the country accounting for an overwhelming share of over 60 per cent of the country's total production. Incidentally, the rapid rise in production of various horticulture products saw Bangalore being identified as an important market by the National Dairy Development Board (NDDDB) when the latter undertook a "vegetable and fruit" market study on behalf on the Union agriculture ministry.

Some important reasons have been identified for the promotion of horticulture production in the state. These include: the agro-climatic condition still prevailing in the state which is conducive for the production of a variety of horticultural crops, the farming community in the state is considered to be knowledgeable and willing to experiment. In addition to their "domain knowledge" the study says the farmers have a keen sense of business acumen and have demonstrated good organising ability, rising demand and consumption in many centres including Bangalore.

The report's optimism also stems

from the fact that Karnataka could act as a production and export base serving major consuming markets located in West Asia and the Far East. Many developed nations do not produce fruits and vegetables during the "offseason". This could be another opportunity, which is waiting to be tapped. However, as the duration of the "offseason" is relatively short, the report warns that deliveries must be well on time. The demand for tropical horticulture produce notably from immigrant population in countries like the US, UK and France is on the rise and also facilitates the growth of horticulture in the state.

Bijapur produces Thomson seedless grapes, acid lime, sapota and maize. Chitradurga is another major production centre accounting for a sizable production of figs, papaya, onion, maize, groundnut and niger seeds. Kolar is a major production centre for mangoes, grapes, onion and tomato. The area under cultivation of mango in the state has gone up from 40,000 hectares in 78-79 to around 1.15 lakh hectares by 96-97. Average growth in the area under the crop has grown at about 6,000 hectares per annum. Important varieties grown include Banganpalli, Raspuri, Malgoa and Swarna. Close to 50 per cent of the state's mango crop comes from the three districts of Bangalore-Rural, Mysore and Kolar. The potential for growth is immense given the fact that Karnataka accounts for less than 5% of the national mango output. Export of mangoes brought the

state a total earning of Rs 15 lakh.

In case of grapes, the state stands second only to Maharashtra in terms of production. The total area under grapes is estimated at 7,000 hectares. Area under the crop has risen by about 100 hectares annually during the period '80-00. Important varieties include Bangalore Blue, Anab-e-shahi, Thomson seedless and Sharad seedless. Bijapur accounts for a major share of the state's production. Other major production centres include Bangalore-rural, Kolar and Belgaum. Estimates indicate that production of grapes was less than one per cent of the national production.

Pomegranate, which is often called an "exotic fruit", is popular in north Karnataka. The area under cultivation has risen by a factor of six during the last two decades. Bijapur district is the major producer of pomegranate accounting for over 20 per cent area under the crop. Pomegranate is perhaps one of the fruits where the state has an advantage in that the production in the state is 25 per cent of the national output. Besides these fruits, the state has also planned to focus on onion cultivation. Currently the state has around 83,000 hectares under onion cultivation, with districts like Chitradurga, Bijapur, Dharwad, Kolar and Bangalore-Rural. Close to 70 per cent of the state's production of onion comes from Bangalore-Rural, Kolar and Dharwad.

*Economic Times*

19.3.2001





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# INDUSTRY NEWS

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## Safal makers poised to go beyond Delhi

Mother Dairy Fruit and Vegetable Ltd. has decided to become a national player. The company, spun off recently by the National Dairy Development Board (NDDB), now has its presence restricted to Delhi.

Confirming its plants to go national, Mr. S. Das, Additional Managing Director of the company said, "Today, we are geared to become a national food major and have plans to expand sales and distribution to an all-India level along with some new products."

This would involve spreading its brands like Safal and Mother Dairy ice cream and milk across the top 23 cities with a population of more than a million.

Entrusting the Mumbai based Samsika Marketing Consultants for its brand strategy, Mother Dairy will be setting up a dual distribution network across these cities.

They have now decided to adopt the FMCG distribution route for its staples and food items, while appoint franchises for milk and vegetables."

Processed Food Industry

Jan 2001



## HLL, Nestle to source Punjab Agro produce

Majors Hindustan Lever and Nestle, along with some defence establishments, have agreed to source dehydrated vegetables for soups and meals from a new plant being set up by Punjab Agro Industries Corporation near Chandigarh.

The plant is one of five new initiatives by the public sector body to increase investment opportunities for processed agro products in the state.

The project for dehydrated vegetables, mainly carrots and onions, is being undertaken by PAIC in collaboration with a private promoter, with Punjab Agro holding not more than 26 per cent stake.

Sources said bank guarantees and funding for the project are already complete and only the state government's final approvals are awaited. The plant would be set up at Dera Bassi near Chandigarh within the next eight -nine months.

Processed Food Industry

Jan. 2001



## DS Group's Big catch

DS Group, has set a Rs 10-crore export target for its 'Catch' mineral water during fiscal 2001-02.

DS group vice-president Mr. Ashok Agrawal told the media that 'Catch' mineral water has done Rs 10 crore volume sales, of which Rs 5 crore was accounted for exports, since its launch about eight months ago.

The water is exported mainly to the US, Europe and West Asian countries. Mr. Agarwal pegged the break-even period of the project at three years.

He claimed that "Catch is the only Indian 'natural spring water' and the only brand to carry National Sanitation Foundation (NSF) certification for meeting the US Foods and Drug Administration (USFDA) Code of Federal Regulations for maintaining quality and safety standards," said Mr. Agrawal.

Processed Food Industry

Jan. 2001



## ITC-IBD to export processed foods

The International Business



Division (IBD), the agricommodity exporting division of ITC, will soon enter the processed foods export business. The company will start exporting by early next year and take up mango and some of the other popular fruits for processing and selling in the international markets.

The immediate focus would be on the US and European markets, where IBD would tap the potential for Indian products in the super markets, said Mr. S. Sivakumar Chief Executive of IBD. IBD is a leading export house of agri-commodities such as soyameal, rice, aquaculture and coffee and the second largest exporter of soyameal, Mr. Sivakumar told press-persons that IBD hoped to make a modest beginning in the export of processed foods and had projected exports worth Rs.5 crore in the first quarter of next fiscal. The exports would comprise mango pulp and by-products from other fruits such as guavas.

Processed Food Industry Jan. 2001



## Jaypee to enter ice-creams, milk products

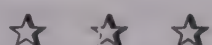
The Jaypee Group of companies is now planning to take a scoop of the ice-cream and processed milk - food markets in India.

The group, with interests in the hospitality, power, leisure, IT, cement and construction sectors, has initiated talks with a New Zealand-based company to set up a joint venture

in India for making ice creams and other processed milk products.

The group's foray into the food-processing sector is likely to be finalized in the current fiscal. "A separate venture will be floated by Jaypee Enterprises Ltd. for the purpose. They are currently finalising the modalities of the venture and the quality distribution,"

Processed Food Industry Jan. 2001



## Marico Industries plans to grow 'Sil'

Marico Industries is evaluating plans to grow the "Sil" franchise into more food categories. Sil, which is currently perceived to be a product in the jams market, has a tremendous potential for growth, the company feels.

Besides jams, Sil is also present in baked beans, mayonnaise, chilli sauces, soya sauces, and such urban centric categories. However, consumers are not much aware of the presence of Sil in these categories. The company is evaluating options to growing the Sil franchise in other food categories where Sil can be built into a stronger.

As a result, Sil's market share in the jams category during the year increased to over 12 per cent from about 10 per cent in the previous year.

Processed Food Industry Jan. 2001



## Colas eat into Rasna market share

It caught the imagination of a generation once. Its signature line almost became a national anthem. Rasna, once a household name, today stands battered by international colas. It is now seen by the market as a candidate ripe for being acquired. In fact, the market is abuzz with speculation that Rasna is certainly up for sale. The market sees Pioma Industries, the Ahmedabad based owners of the Rasna brand, as having little option but selling the brand. Merchant banking sources reveal that the company is believed to have shortlisted two companies, one of whom is a multinational.

While the company vehemently denies that it is selling the brand, sources say that the company has been unable to find the right buyer because it is quoting a higher price. Market observers estimate the brand to be valued between Rs 50-60 crore.

According to Rasna CMD Piruz Khambatta : "We are not looking at any buyers nor have looked ever for buyers in the past. On the country, we are in talk with merchant bankers to acquire brands. Market observers say the Rasna could be looking at two types of buyers - impulse food manufacturers and cola companies, for both of whom it could be a category extension. And, there seems to be valid reasons to sell the brand. Analysts tracking the sector believe that the company has destroyed the



brand value of Rasna over the last couple of years by venturing into areas which is not its core competence.

Three years ago, it launched Oranjolt which had to fight for shelf space with cola companies like Pepsi and Coke.

The launch of these international colas was eating into the sales of the core brand Rasna and Oranjolt was launched as a flanking defence.

Pioma was confident that its huge and successful distribution network would also help it with Oranjolt, an aerated fruit Juice, Grocers, chemists, general stores and backers all stocked Rasna and the brand has a strong presence in the interiors, a chink in the cola juggernaut's armour. There was also another reason for launching Oranjolt: the aerated drinks market was huge and the reasoning was that even a small fraction of that would be larger than Rasna's core market, the non-aerated inhome drink market.

But there was only one problem: the huge ad budgets that Pepsi and Coke brought to bear on the market. Also, Oranjolt had none of the logistic advantages that originally turned Rasna soft drink concentrate into one of the country's most conspicuous brands-the compact packet that had an intrinsic distribution and cost advantage. This one factor alone make it a value-for-money product, that left syrups and squashes behind. Rasna, at one point, controlled and estimated 60 per cent of the inhome, non-aerated soft

drinks market in terms of volumes.

Said an analyst with a foreign brokerage firm: Since Pioma's extension into non-core areas haven't worked too well, it has to that extent diluted the brand image of the Rasna brand.

A recent ORG-Marg study has put Rasna soft drink concentrate (SDC) as a clear leader in its category of soft drink concentrated and powder markets, accounting for more than 90 per cent market share. But this number needs some perspective: Rasna owns 90 per cent in a vastly shrunk market, with few large national players.

In the early eighties, there were a lot of brands launched in the same category, namely, Dipy's and Trinku, which exited years ago.

"Rasna has also languished after the initial upturn in the eighties. So the question is not the death of the brand but that of the category. The company has lacked focus by moving to non-core areas. It should rather have taken the category seriously", said Jagdeep Kapoor, managing director of marketing consultants Samsika.

*Economic Times*

8.1..2001



## Coke, P & G chip in with a juicy cocktail

Soft drink giant Coca-Cola Co and consumer products behemoth Procter & Gamble Co today said they plan to form a stand-alone juice

and snack company, a venture that marries Coke's quest to expand its non-carbonated beverage line-up with P&G's need to boost lagging chip and juice sales.

The deal will unite P & G's Pringles snack chips and Sunny Delight brand beverages with Coke's Minute Maid juices, Hi-C, Five-Alive and Fruitopia drinks, among others.

The new firm will focus on developing and marketing new juices, juice-based beverages and snacks on a global basis, the companies said.

The deal comes on the face of shrinking food and beverage sales at Cincinnati-based P & G, which had prompted some analysts to say the company need to exit the snack and juice business.

"They're obviously in this instance being very creative in maximizing shareholder value in kind of removing these brands (from the P & G portfolio ) and teaming up with another powerful player," William Steele, consumer products analyst at Banc of America Securities said.

Procter & Gamble's food and beverage sales fell 12 per cent to \$2.23 billion in the six months ended December 31 compared to a year ago, with earnings down 18 per cent for the unit.

At the same time, Coke faces the prospect of lagging behind archrival Pepsi Co in non carbonated beverages, which are growing faster than the carbonated segment, where Coke leads.



Coke recently lost out to Pepsi Co in a bid to buy alternative drinks market South Beach Beverage Co. Atlanta-based Coke also recently stepped back from a deal with Quaker Oats, which owns leading sports drink Gatorade, which is also being acquired by Pepsi.

Each company will own 50 per cent of the yet to be named venture, which is expected to have annual sales of more than \$4 billion. Don Short, a 24-year Coca-Cola veteran, was named chief executive of the new company, the firms said.

"This new company will focus all of its resources on becoming the global leader in innovative snacks and nutritional beverages," Coke CEO Doug Daft and Procter & Gamble President and chief executive AG Lafley, said in a joint statement.

The new venture will be better positioned to grow the non-carbonated business, Short said.

*Economic Times*

22.2.2001



## Tropicana aims at more juicy sales growth

Tropicana Beverages Company, part of the PepsiCo group, is planning to repack its five flavour offering for the Indian customer. The beverage, which is sold in one litre and 250 ml packs, would now be offered only in .1 litre and 200 ml packs.

"Our decision to retail the

product in 200 ml packs is an attempt to prevent consumption wastage among our customers. The pack would be priced attractively," Tropicana sales head, N Balasubramanian told ET. As part of the strategy, the company has stopped the production of the 250 ml pack.

The new flavour-sweet orange is being targeted at those customers who are not used to the regular orange flavoured juice, which Tropicana sells worldwide.

Besides, the company is planning to introduce new flavours, clearly aimed at helping the company maintain its leadership position in the juice market.

Tropicana is also exploring the possibility of local production of juices from mango. "Critical issues like quality and logistics need to be addressed. It is difficult to talk of a time-frame for introduction of new products from locally available raw materials," Mr Balasubramanian said.

The juice market is valued at Rs 100 crore, with Tropicana having close to 30 per cent share, a volume which the company hopes to raise to around 40 per cent within the next 12 to 18 months.

The company, Mr Balasubramanian said, was positioning the product as a "health drink" targeted at the health-conscious. Tropicana is available on a selective basis in over 14,000 outlets spread over 16 cities.

Besides using conventional media

for promotion, the company has also targeted potential customers in gymnasiums, hospitals and parks.

Tropicana's juices have over 75 per cent fruit content against fruit drinks (which have around 12-20 per cent fruit content) and fruit nectars (where the content is placed around 30 per cent).

*Economic Times*

10.3.2001



## Asian food exports hit by poor quality

Asian countries are losing out in the international food market mainly on account of filth, contamination, decomposition, pesticide residues and food additives, said N M Kejriwal, vice-president of the International Life Science Institute-India.

Mr Kejriwal was speaking at the inaugural one-day workshop on "Improving quality of food product for domestic and export markets" jointly organised by FKCCI and the International Life Science Institute-India (ILSI-India) here recently.

The global food trade is valued around \$225 billion and unreasonably high loss of market deprives many developing nations of valuable foreign exchange earnings.

Delivering the presidential address, Karnataka's additional chief secretary and development commissioner N Viswanathan said the state hoped to draw on the experience and learning of the life science institute to develop the food



processing industry in the state.

"Unlike the new economy, the agriculture sector in India is a subsistence based vocation. The rate of return is low. And this is compounded by the fact that the traders also seek a higher rate of return." Mr Vishwanathan added.

Karnataka, he added, was the country's largest producer of maize.

However, during the last two to three years the state had witnessed a rise in production and currently produced around 2.3 million tonnes of maize.

The rise in production has forced the state government to undertake procurement.

The state, he continued, had procured only 12 per cent of the total production.

Mr. Viswanathan also called for greater investment in the food processing industry.

The industry, he noted, had good growth potential in Karnataka, given the fact that the state was leading producer of fruits and vegetables.

*Economic Times*

19.3.2001



## Cheers ! Chitoor raises a toast to mango drink

Andhra Pradesh's Chittoor district will soon leverage its position as a leading producer of mango known as the King of Indian fruits. A district association of mango processors is now planning to

promote mango in drink form.

In the initial phase, which is due to start around Telugu New Year time (around third week of April) members of the Chitoor District Fruit Processor's Federation (Chitoor federation) would be installing mango fruit-juice dispensers in different parts of Chitoor under a common brand name "7 hills".

Tirupati, the abode of Lord Venkateshwara, which is an hour's ride from Chitoor is often referred to as "7 hills". Each dispenser would serve a 200ml cup of mango juice at less than Rs five.

The dispensers will cost around Rs 20,000. The project is also innovative in the sense that it has no financial assistance for the experiment. All the expenses being are being borne by the member units themselves.

Chitor district accounts for over 55 per cent of the mango pulp production in Andhra Pradesh and is a major producer of mango varieties like-Raspuri, Totapuri and Alphonso.

Mr Govardhan Bobby, a member of the Chitoor federation said the idea behind the experiment is to expand the domestic market.

Not only is the price attractive, the drink is also more nutritious as it has higher percentage of fruit contents, said Mr Bobby.

Once the Chitoor experiment is successful, Mr Bobby hopes that it would be replicated in other parts

of Andhra Pradesh.

"We do hope that other such federations come out with similar plans in other parts of the country," he adds.

He is confident of the success of this scheme the annual consumption of mango pulp (which is used in making the fruit juice) in India is around 20,000 tonnes compared to about 7,000-10,000 tonnes in a small city-state like Kuwait.

*Economic Times*

19.3.2001



## Kraft to promote Tang with Dabur

To be available in 25 & 500gm packs.

In a smart move, Kraft has entered into an alliance with Dabur for the distribution of Tang, a fruit flavoured beverage. Offering the "real taste of orange," Tang supplies a full day's supply of vitamin C. Tang, developed in the 1950s, leads the world in the powdered soft drinks category.

Tang will initially be available in the orange flavour. It will be available in a 25 gm sachet pack for Rs 7 and a 500gm refill pack priced at Rs 100. Other flavours will be added along the way in accordance with the suitability to the Indian consumer.

KJS India Pvt Ltd, a 100 per cent subsidiary of Philip Morris India, will manufacture and market Tang in India. Beginning with Delhi, Tang



will be rolled out to over 20,000 retail outlets in Mumbai, Chennai, Bangalore and Hyderabad by the end of April 2001.

The initial launch quantities will then be imported, but Tang will soon be produced at the 6,000 tonnes facility in Hyderabad.

Tang, however, might not be the only Kraft product in India. Head of marketing Giuseppe Fritella said, "The launch of Tang in India marks the beginning of our endeavour to build a significant food business in India."

KJS Pvt. Ltd. received FIPB approval in 1996 for establishing ventures in India principally in the areas of agro-based food processing; including powdered foods and beverages, cheese and several other product categories.

On the brand image of Tang, Ajit Sahgal, general manager, said, "We are projecting it will be adapted for the Indian consumer."

The target market for Tang will be mothers and children and will also be projected as an all-day drink with great orange taste and a full day's supply of Vitamin C.

In India, the PSD category only has 0.2 per cent share. Kraft plans not only to capture that with Tang but also seeks to increase the share of PSD in the market.

Along with establishing itself as a brand in India, Kraft seeks to provide community support by means of national philanthropic donations in areas of hunger, arts and education among others.

Kraft has more than 70 brands in various food categories. Its more popular brands include Tang, Kool-Aid, Kraft Cheese, Jello, Toblerone Chocolates, Oreo Cookies, Ritz Crackers, Maxwell House Coffee and many more.

*Asian Age*

20.3.2001



## Elite Foods gets ISO 9002 certification

Elite Foods Private Ltd. which has become the first bread manufacturer in India to be awarded the international recognition of ISO 2002, is on the threshold of becoming a National and global player, the company's managing director TR Raghulal, said.

The ISO certificate was handed over by Bureau of Indian Standards director P Ravindranathan to Mr Raghulal at Kochi today.

Addressing a press meet, Mr Raghulal said Elite's state-of-the-art bread manufacturing plant in Hosur manufactures and supplies breads to the markets of Tamil Nadu and Karnataka.

In Kerala, Elite has a factory at Aroor and corners 40 per cent of the bread market.

The manufacturers of the largest selling bread in Kerala, Elite has many firsts to its credit.

*Financial Express*

21.3.2001



## HACCP ISO 9002

M/s Madhav Food, Block No. 228 Dabhasa, Padra Jambusar Highway, Dist. Vadodara and a member of AIFPA have received two prestigious certifications for their Quality Standards. They have been awarded with HACCP & ISO 9002 from M/s Q.A.S., Australia.

M/s Madhav Foods are the First Pickle manufacturing Indian Company to receive both the HACCP & ISO 9002 certificates together.



# NEW PRODUCTS / MACHINES

## Cordless glueing by Gluematic 5000

Steinel-one of the World Leaders in Power Tool Manufacturing introduces in Steinel Glue Gun Gluematic 5000 for Sticking, Fixing, Attaching or Sealing any material especially ATC Carton Packing and Corrugated Box packing.

Hot Melt Adhesive application handheld guns for Corrugated Carton Edge Fold Glueing, ATC Carton Packing & Miscellaneous Peel and Tear Off Packaging requirements for the Food, Confectionery, Pharmaceutical Industry. Other applications include Vinyl Flooring fixing, Fastening Carpet, Stationery Book Binding, Furniture and Mattress mounting, Glueing Insulated pipes, Glueing carpet toe kicks, glueing textile and cloth, Glueing caples, and tubes and many other General Purpose applications.

Candle Type Glue Sticks are fed into the Gun, which permits a speedy well metered flow of glue at virtually unlimited rate of adhesive delivery without the messiness.

With its electronically controlled dual heating system, the gun ensures a very high continuous glueing capacity by merely changing the gun

for 3 minutes on its own Charging Station.

The unique cordless design with its insulated storage chamber ensures free flowing hot melt adhesive at any location in the work area without worrying about the Cord Length.

**Pamvi Exports Pvt. Ltd.**

Fax : 6326280/6344083

E-mail: pamvi@vsnl.com

*Packaging Technology*

*Oct. - Nov. 2000*



## Ink Coder

Suvichem inks & Coding System, has introduced 501 and 5001 series of ink coders which can code up to three lines of message on to moving products and pouches. The CODER 501 is an on-line coding machine which runs with the parent machine motion while the icoder 5001 runs pneumatically at a speed of 120 strokes per minutes.

Special fast drying indelible coding ink, inking rollers and rubber stereotypes are other products of the company.

**Suvichem Inks & Coding Systems**  
Fax : 0581 446265

*Packaging Technology*

*Oct. - Nov. 2000*



## Can Packaging Machinery

A. K. Industries was established by Mr. A. K. Kapoor in 1978 after closure of Metal Box Co. of India Ltd. The company took the initiative to manufacture the first 24 DS seamer in 1990. The company has trained and skilled technicians. After operating through our associate dealers M/s. CANTECH Machines/ Engg, Mumbai and M/s. SUPER SEAM, Chennai we have decided to serve the country ourselves directly. Our machines are in good demand not only in India but also in the Middle east, various African countries and several part of the world.

Semi-automatic Seamers (24 DS seamer, 1A DS Seamer) with speed of 25-45 cans per minute, Body Reformer, Hand Flanges, Flange rectifier, Treadle Embossing Press, Body Beader are our basic range of machines.

For further details, contact :

**A. K. Industries**

37, Prince Anwar Shah Road  
Left of C. I. T. Market  
Calcutta 700033

Tel : 033-42228877

Telefax : 033-4220168

Email: Vishal\_kap\_2000@yahoo.com

*Rev & Food World*

*Dec-2000*





# FAIRS & SEMINARS

## 47th International Fancy Food & Confection Show, July 8-10, New York, USA

India Trade Promotion Organisation (ITPO) is planning to organise India's Participation in the above show for the fourth time.

This show is the best in North America and well known in the world for agro and food products.

Interested persons may contact. Mr. Mohan Lal, Market Analyst, ITPO, Pragati Bhawan, Pragati Maidan, New Delhi - 110 001 Tel : 3318142, 3320855, 3317896, 3371540, Fax : 3318142.



## Fine Food Australia, 27-30 August 2001 at Sydney Convention & Exhibition Centre, Sydney.

The First Australian Organic Food Conference will be held at Sydney Convention Centre from 27-28 August. This conference is being

supported by the Rural Industry Research & Development Corporation.

Interested persons may contact: Mr. Dinesh Taneja, Director-India Group, World Wide Exhibitions Pvt. Ltd., Post Box No. 3564, E-186, Basement-5, Lajpat Nagar-I, New Delhi-110024, Telfax : 0091+11-684 8281, E-mail : dineshin@del3.vsnl.net.in



## Anuga, 13-17 Oct 2001, Cologne, Germany.

Anuga has been the leading business fair, for German & International Food & Drink Industry for half a century now. Anuga focuses on 12 Food Worlds - all newly structured & offers new opportunities. The product profile of the exhibits will be : (i) Fruits & Vegetables (2) Frozen Foods (3) Drinks (4) Milk & Milk Products (5) Bread, Bakery & Beverages (6) Staples & Fine foods (7) Vending (8) Specialities (9) Catering Technology and (10) Retail Technology & display. Orbit the Tour Organisers can arrange Business Tour Packages for visitors to the Fair.

Interested persons may contact for participation Mr Praveen Sharma, Executive Sales, Business Tours, Orbit, 4/10, East Patel Nagar, New Delhi - 110008. Tel : 011-5850983/5850985/5852056, Fax : 011-5850983, E-mail : del@orbit-world.com, Website : www.orbit-world.com.



## Propak Thailand 2001, June 13 - 16, 2001, Queen Sirikit National Convention Centre, Bangkok.

The above is the 8th International Food Processing & Packaging Technology Exhibition which covers CanTech 2001, Pharmapak 2001, Seafood Tech 2001 & Retailpak 2001.

Asia Co-ordinator : Mrs Wendy Lim  
International Expo Management Pte Ltd.  
Tel : +65 7361221  
Fax : +65 736 1771  
E-mail : enquiry@iemmontnt.com



### FICCI GETS GRANT FROM EU

The Federation of Indian Chambers of Commerce and Industry (FICCI) has signed a contract with the European Commission for a grant of Euro 1,20,000/- for training Indian trainers and a group of companies in Hazard Analysis Critical Control Points (HACCP) in food safety practices.



# **GOVT. CIRCULARS**

## **HEALTH & FAMILY WELFARE PRESS INFORMATION BUREAU GOVERNMENT OF INDIA LABELLING OF PACKAGED FOOD PRODUCTS CONTAINING NON-VEGETARIAN INGREDIENTS**

NEW DELHI: Phalguna 2 1922

February 21, 2001

The Ministry of Health and Family Welfare has clarified that the notification issued on May 17, 2000, amending the Prevention of Food Adulteration (PEA) Rules, 1955, stipulating that all packaged food products containing non-vegetarian ingredients should be labelled for the information of the customers with effect from November 17, 2000, had been rescinded only to incorporate some more amendments. As it is obligatory for the Government to notify any amendment in the form of a draft, the proposed amendment was notified on October 6, 2000, along with the notification rescinding the earlier one issued on May 17, 2000.

A section of the press has reported that the notification of May 17, 2000 has been rescinded and that the matter has been referred to the Committee of Secretaries with a view to stalling the implementation of the amendment. Neither the Ministry of Health and Family Welfare nor the Health Minister has used the "common stalling tactics" as insinuated in the press reports. The matter was referred to the Committee of Secretaries by the Department of Food Processing and not by the Ministry of Health and Family Welfare.

### **PRESS NOTE**

Government of India has issues a Gazette Notification GSR No. 67(E) dated 5.2.2001 amending with immediate effect the provisions under Prevention of Food Adulteration Rules, 1955 relating to standards for some dairy products and for atta, maida and barley powder.

The notification spells out the limits for preservatives like sorbic acid and nisin in cheese and processed cheese, harmonising these parameters in the standards under PFA with those prescribed internationally by Codex Alimentarius Commission. It also removes the specifications for partly skimmed milk powder currently available under the PFA. This has been done because this product has become anachronistic with the development of adequate refrigerated storage and transportation facilities as well as processing capacities in the country.

The existing standards in PFA Rules for atta, maida, suji etc. require that they are free from uric acid, rodent



hair, excreta etc. To further reinforce this aspect which has health implications, PFA Rules will now require that these products shall be prepared by milling, grinding etc. from grains which are clean and free from rodent hair and excreta. In products like barley powder, the grain would need to be not only from grain that is clean and free from rodent hair but also properly dehusked. These provisions have been introduced as part of the on going exercise to ensure that consumers receive clean and wholesome food.

The notification has been finalised after taking into consideration, the public comments received in response to the draft rules notified vide GSR No. 107 (E) dated 11.2.2000.

— — — — —  
**MINISTRY OF HEALTH AND FAMILY WELFARE**  
(Department of Health)

**NOTIFICATION**

New Delhi, the 5th February, 2001

G.S.R.67(E) Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955 were published as required by sub-section(1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) in the notification of Government of India in the Ministry of Health and Family Welfare (Department of Health) number. G.S.R.107 (E), dated the 11th February, 2000 in the Gazette of India, Extra-Ordinary, Part II, Section 3, Subsection (i), dated the 11th February, 2000 inviting objections and suggestions from all persons likely to be affected thereby before the expiry of a period of sixty days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public;

And whereas the copies of the said Gazette of India were made available to the public on the 14th February, 2000;

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Government ;

Now, therefore, in exercise of powers conferred by sub-section (1) of section 23 of the said Act, the Central Government, after consultation with the Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely ;-

**RULES**

1. (1) These rules may be called the Prevention of Food Adulteration (2 nd Amendment ) Rules, 2001.  
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Prevention of Food Adulteration Rules, 1955 (hereinafter referred to as the said rules)-
  - (a) in rule 42, sub-rule (K) shall be omitted.
  - (b) In rule 55, in the table, against entry "28. Cheese or processed cheese" occurring in column (1), in columns (2) and (3), for the entries, the following entries shall respectively be substituted, namely:-

(2)	(3)
"Sorbic acid including its sodium, potassium and calcium salts (Calculated as sorbic acid)	3,000
Nisin	12.5"



3. In Appendix "B" to the said rules-

- (a) in item A.11.01.11, for the words, "Standards for different classes and designations of milk shall be as follows ", the following shall be substituted, namely, "The standards of different classes and designations of milk shall be as given in the table below. Milk shall conform to both the parameters for milk fat and milk solids not fat, independently, as prescribed in columns (4) and (5) of the said table".
- (b) In item A.11.02.07, for the words and figures. "Hard cheese may contain 0.1 percent of sorbic acid, or its sodium, potassium or calcium salts calculated as sorbic acid, or 0.1 percent of nisin either singly or in combination", the following words and figures shall be substituted, namely,-  

"Hard cheese may contain up to 3000 parts per million sorbic acid, or its sodium, potassium or calcium salts calculated as sorbic acid, and / or 12.5 parts per million nisin either singly or in combination".
- (c) for item A.11.02.07.01 and the entries relating thereto, the following item and entries shall be substituted, namely,- "A. 11.02.07.01. PROCESSED CHEESE means the product obtained by heating one or more types of hard cheeses with permitted emulsifiers and / or stabilizers namely citric acid, sodium citrate, sodium salts of orthophosphoric acid and polyphosphoric acid (as linear phosphate) with or without added condiments, and acidifying agents, namely vinegar, lactic acid, acetic acid, citric acid and phosphoric acid. Processed cheese may contain not more than 4.0 per cent of anhydrous permitted emulsifiers and / or stabilizers, provided that the content of anhydrous inorganic agents shall in no case exceed 3.0 per cent of the finished product. It shall not contain more than 47.0 per cent moisture. Processed cheese chiplets (Packed sliced cheese) when sold in a package other than tin , shall not contain more than 47.0 per cent moisture. Processed cheese may contain upto 3000 parts per million sorbic acid or its sodium, potassium or calcium salts (calculated as sorbic acid) and /or 12.5 parts per million nisin either singly or in combination. It may contain calcium chloride (anhydrous ) not exceeding 0.02 per cent by weight."
- (d) in item A. 11.02.07.02, in the second paragraph, for the words and figures, "Processed cheese spread may contain sorbic acid or nisin or both to the maximum extent of 0.1 percent by weight ."the following words, figures and brackets shall be substituted, namely,-  

"Processed cheese spread may contain up to 3000 parts per million sorbic acid or its sodium, potassium or calcium salts (calculated as sorbic acid ) and / or 12.5 parts per million nisin."
- (e) in item A. 11.02.16, in the last paragraph, the portion beginning with the words, "Partly skimmed milk powder ( sour)" and ending with the words and figures, "except that solubility percentage will be 75 percent minimum by weight." shall be omitted;
- (f) In item A.18.01, for the words, "ATTA or resultant atta means the course product obtained by milling or grinding wheat," the following words shall be substituted, namely-  

"ATTA OR RESULTANT ATTA means the course product obtained by milling or grinding clean wheat free from rodent hair and excreta".
- (g) in item A.18.02, for the words, "MAIDA means the fine product made by milling or grinding wheat and bolting or dressing the resulting wheat meal," the following words shall be substituted, namely-  

"MAIDA means the fine product made by milling or grinding clean wheat free from rodent hair and excreta and bolting or dressing the resulting wheat meal".



- (h) in item A.18.03, for the words and brackets, "SEMOLINA (SUJI OR RAWA) means the product prepared from wheat by process of grinding and bolting," the following words and brackets shall be substituted, namely -

"SEMOLINA (Suji or Rawa) means the product prepared from clean wheat free from rodent hair and excreta by process of grinding and bolting."

- (i) In item A.18.05.01-

- (a) for the words and brackets, "WHOLEMEAL BARLEY POWDER OR BARLEY FLOUR OR CHOKER Yukt Jau ka Churan means the product obtained by grinding clean and sound dehusked barley (*Hordeum vulgare* or *Hordeum distichum*) grains", the following words and brackets shall be substituted, namely,-

"WHOLEMEAL BARLEY POWDER OR BARLEY FLOUR OR CHOKER Yukt Jau ka Churan means the product obtained by grinding clean and sound dehusked barley (*Hordeum vulgare* or *Hordeum distichum*) grains free from rodent hair and excreta ."

- (b) the words, figure and letters, "Rodent hair and excreta shall not exceed 5 pieces per kg", shall be omitted.

[No.P.15014/9/99-P.H.(Food)]

DEEPAK GUPTA, Jt. Secy.

**Foot note** : The Prevention of Food Adulteration Rules, 1955 were published in Part II , section 3 of the Gazette of India vide S.R.O.2105 dated the 12-9-1955 and were last amended vide G.S.R.7 (E) dated the 4-1-2001.

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**PRESS NOTE**

Govt have issued a Gazette notification GSR No. 76 (E) dated 7.2.2001 for amending some of the provisions in the PFA Rules 1955 pertaining to food additives. It also seeks to amend Rules 37 & 42 of the PFA Rules to modify the existing provisions relating to the manner and content of labelling gutka as well as pan masala containing tobacco.

Food additives are allowed for use in food products consumed in the country to the extent of levels recommended as safe for human consumption by the Central Committee for Food Standards. Accordingly limits are now proposed to be fixed for the extent of sodium aluminium silicate which can be used in powdered soft drink mixes and non-dairy creams and lactulose syrup in special milk based infant food formulations and bakery products and sodium bicarbonate in canned tomato soup. The existing limit of 1% prescribed for presence of total glutamate content in ready-to-serve food is also proposed to be removed.



The provisions relating to labelling of chewing tobacco products are proposed to be amended to provide for a declaration regarding the injurious nature of tobacco. This is to be shown in two languages, of which Hindi or English will have to be compulsorily provided, while the other may be a regional language, if so required. Similarly requirements regarding colour, type of letters used, the quality of printing and even the text of the warning are also proposed to be prescribed in the Rules so that these become more viable to the consumer.

Comments are invited from the public in this matter within the next 45 days on the proposed amendments. The comments may be addressed to Secretary (Health), Ministry of Health and Family Welfare, Nirman Bhavan, New Delhi-110011.

**MINISTRY OF HEALTH AND FAMILY WELFARE**

(Department of Health)

**NOTIFICATION**

New Delhi, the 7th February, 2001.

**G.S.R.76 (E).**- The following draft of certain rules further to amend the Prevention of Food Adulteration Rules, 1955, which the Central Government after consultation with the Central Committee for Food Standards proposes to make, in exercise of the powers conferred by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), is hereby published as required by the said sub-section of the said Act, for the information of all persons likely to be affected thereby, and notice is hereby given that the said draft rules will be taken into consideration after the expiry of a period of sixty days from the date on which the copies of this Official Gazette in which this notification is published, are made available to the public;

Objections or suggestions, if any, may be addressed to the Secretary, Ministry of Health and Family Welfare, Government of India, Nirman Bhavan, New Delhi-110011.

Objections and suggestions, which may be received from any person with respect to the said draft rules within the period specified above, will be considered by the Central Government.

**DRAFT RULES**

1. (1) These rules may be called the Prevention of Food Adulteration(..... Amendment ) Rules, 2001.
- (2) These rules shall come into force with effect from .....
2. In the Prevention of Food Adulteration Rules, 1955. (hereinafter referred as the said rules), after rule 37-D, the following rules shall be inserted namely

"37-E-Labelling of Pan Masala Chewing Tobacco: Without prejudice to any other provisions relating to Labelling requirement contained in these rules every container of Pan Masala, Chewing Tobacco or any label affixed thereto and advertisements relating thereto shall indicate in a clear, conspicuous and in an easily readable manner, the declaration and advertisement as provided under sub rules (zzz)and (zzz) (3) of rule 42.

The declaration/warning shall meet the following requirements namely :-



- (i) The particulars of declaration shall be in two languages; wherein English or Hindi is compulsory and second language may be regional language. Where regional language is Hindi in such region declaration in both Hindi and English shall be compulsory so that consumer may understand it.;
- (ii) The colour of the warning, text printed or used for advertisement shall be different from that of colour of background of the label, container, or the advertisements, as the case may be.;
- (iii) The type of letters used for declaration shall not be in any case less than two millimeter height, in case of net quantity, weight of the products are upto 200gm. For other packets, the types of letter shall be as per the provisions of rule 36.;
- (iv) Warning shall be displayed :-
  - (a) On Cylindrical / Rectangular Container- On Top of Central Panel.
  - (b) On Sachets /Pouches on Top of the both sides of Sachets / Pouches, Packs;
- (v) The printing of label and declaration shall be in Matt finish.

3 In rule 42 of the said rules-

- (a) for sub-rule (zzz), following sub-rule shall be substituted, namely:- "(zzz)Every package of chewing tobacco and advertisement relating thereto shall carry the following warning, namely:-

**CHEWING OF TOBACCO IS INJURIOUS TO HEALTH**

- (b) for sub-rule zzz (3) the following sub-rule shall be substituted, namely :-

"(zzz) (3)Every package of Pan Masala and advertisement relating thereto shall carry the following warning, namely :-

**CHEWING OF PAN MASALA MAY BE INJURIOUS TO HEALTH**

4. In rule 62 of the said rules, after the second proviso the following shall be inserted, namely :-

"Provided also that Sodium Aluminum Silicate may be used in powered soft drink mixes, non-dairy cream in quantities not exceeding 0.5 percent."

5. For rule 64-B of the said rules, the following rule shall be substituted, namely :-

"64-B. Use of monosodium glutamate may be added to an article of food under proper label declaration as provided in sub-rule'(S) of rule 42. It shall not be added to any food for use by the infant below twelve months."

6. In rule 72-A of the said rules, in the Table after item 17 and the entries relating thereto in columns 1, 2 and 3, the following items and entries shall respectively be inserted, namely-

1	2	3
"18. Sodium Bicarbonate	Canned Tomato Soup	GMP"

7. After rule 69, in Part XVI-of the said rules in the heading, for the words and brackets "SEQUESTERING AND BUFFERING AGENTS (ACIDS, BASES AND SALTS)" the following shall be substituted, namely-



"SEQUESTERING AND BUFFERING AGENTS (ACIDS, BASES AND SALTS ) AND OTHER SUBSTANCES",

8. After rule 72-C of the said rules, the following rule shall be inserted namely-

" 72-D-Use of Lactulose Syrup in foods-

(i) Lactulose Syrup may be used in special Milk based infant food formulations to be taken under medical advice upto a maximum level of 0.5 percent of final food subject to label declaration.

(ii) Lactulose Syrup may be used in bakery products upto 0.5 percent maximum by weight.

9. In appendix 'B' to the said rules, in item A. 15.01 after thesecond proviso, the following shall be inserted namely :-

"Provided also that the potassium chloride may be added to iodised salt in ratio not exceeding fifty percent of potassium chloride subject to label declaration giving ratio of potassium chloride and sodium chloride., The product shall not be sold as iodised salt. However this shall conform to the Iodine content prescribed for iodised salt at manufacturer / distribution channel under item No. A. 15.01."

[P 15014/7/2000 PH] (FOOD)

DEEPAK GUPTA, JT Secy.

**Foot Note** : The Prevention of Food Adulteration Rules 1955 were published in Part II, Section 3 of Gazette of India vide SRO 2105 dt 12-9-1955 and were last amended GSR No. 7 (E) dated 4-1-2001.

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**MINISTRY OF HEALTH AND FAMILY WELFARE**

(Department of Health)

**NOTIFICATION**

New Delhi, the 7th March, 2001

**G.S.R.165 (E)**-Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by sub-section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), with the notification of Government of India in the Ministry of Health and Family Welfare (Department of Health) No. G.S.R.878 (E), dated the 20th November, 2000 inviting objections and suggestions from all persons, likely to be affected thereby before the expiry of a period of forty-five days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public;

And, whereas the copies of the said Gazette of India were made available to the public on 21st November, 2000;

And, where as the objections and suggestions received from the public on the said draft rules have been considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 23 of the said Act, the Central Government, after consultation with the Central Committee for Food Standards, hereby makes the



following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely :-

**RULES**

1. (I) These rules may be called the Prevention of Food Adulteration (3rd Amendment) Rules, 2001.  
(II) They shall come into force after expiry of three months from the date of their publication in the Official Gazette.
2. In the Prevention of Food Adulteration Rules, 1955,-- in Appendix 'B'-
  - (a) in item A.18.06, the following shall be inserted at the end, namely :- "The food grains meant for grinding / processing shall be clean, free from all impurities including foreign matter (extraneous matter).";
  - (b) in each of the items A.18.06.01, A.18.06.02, A.18.06.03, A.18.06.05, A.18.06.06, A.18.06.07, A.18.06.08, A.18.06.09, A.18.06.10, A.18.06.11, A.18.06.12, A.18.06.13, and A.18.06.14,-
    - (1) for standard (ii) the following standard shall be substituted, namely :-

(ii) Foreign matter- (Extraneous matter)	Not more than 1 per cent by weight of which not more than 0.25 per cent by weight shall be mineral matter and not more than 0.10 per cent by weight shall be impurities of animal origin."
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  - (2) Standard (viii) shall be omitted;
- (c) in item A.18.06.04,
  - (i) for standard (ii) the following standard shall be substituted, namely :-

(ii) Foreign matter (Extraneous matter)	Not more than 1 per cent by weight of which not more than 0.25 per cent by weight shall be mineral matter and not more than 0.10 per cent by weight shall be impurities of animal origin."
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  - (2) Standard (vii) shall be omitted.

[No.P.15014/11/2000-PH (Food)]  
DEEPAK GUPTA, Jr.Secy.

**Note** : The Prevention of Food Adulteration Rules, 1955 were published in Part II, section 3 of the Gazette of India vide S.R.O.2105 dated the 12th September, 1955 and were last amended vide G.S.R.67 (E) dated 5-2-2001.

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**MINISTRY OF HEALTH AND FAMILY WELFARE**

(Department of Health)

**NOTIFICATION**

New Delhi, the 21st March, 2001

**G.S.R.202 (E)** - In exercise of powers conferred by sub-clause (c) of Clause (v) of section 2 of the Prevention of Food Adulteration Act, 1954 (37 of 1954), the Central Government having regard to its use, nature, substance and quality, hereby declares packaged drinking water as "Food" for the purposes of the said Act.

[F.No.P-15014/6/97-PH (F)]

DEEPAK GUPTA, Jt Secy.

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**EXTRACTS OF THE CALCUTTA GAZETTE DT FEBRUARY 14, 2001 RELATING TO  
FOOD INDUSTRY**

**14. Subsidy for Quality Improvement in the Small Scale Sector :**

An eligible Industrial unit in the Small Scale Sector shall be reimbursed 50% of the expenditure upto a maximum of Rs.5.00 lakhs for installing pollution control devices and obtaining ISI Certification /ISO 9000 from approved Institutions /Research Laboratories.

**15. Additional Incentive for Information Technology, Electronics, Agro and Food Processing Industries & HPL (Haldia Petrochemicals Ltd.) Downstream Projects :**

15.1 Additional Incentive for Information Technology, Electronics, Agro and Food Processing Industry and HPL Downstream Projects located in Group 'A' area shall be eligible to the same incentives as are normally admissible to a new unit located in Group 'B' area.

15.2 New units in the area of Information Technology (Software, Hardware), Electronics, Agro & Food Processing Industry & HPL Downstream Projects located in Group 'B' and Group 'C' areas will be entitled to additional interest subsidy of 10% of interest liability subject to a further ceiling of Rs. 20.00 lakhs. The total interest subsidy will be available for an additional period of 2 years in all such cases.

15.3 New units in the area of Information Technology (Software, Hardware), Electronics, Agro & Food Processing Industry & HPL Downstream Projects irrespective of their location will be entitled to full exemption from payment of stamp duty and registration fee required for registration of documents relating to purchase/acquisition of land & buildings for setting up of the approved project.

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## APEDA NEWS

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**Shri. Anil Swarup has taken over as Chairman, APEDA with effect from 12th March 2001**



**Study to identify opportunities of Indian standards and procedures for APEDA'S major products with major trading partners**

Ministry of Commerce desired to conduct a study for comparing various Indian products, hygiene and inspection standards and procedures with those of the Codex and other major countries. The objective is to have an understanding of the limitations of the Indian standards and procedures for export purposes and also to identify non-tariff barriers to trade introduced by the developed countries so that these could be discussed at the multilateral forum. The government desire to complete this exercise expeditiously. This study has been given to Mr. Vijay Sardana who was earlier working as secretary in Confederation of Indian Food Trade & Industry (CIFTI).

Based on the discussion, he submitted a proposal for undertaking the study covering 24 products and 7 countries plus Codex and UN-ECE standards and regulations.

*Apeda Update*

*Jan 2001*



**Codex Standards now available at APEDA**

With respect to the trade in agricultural field, the agreements playing the crucial role are Sanitary and Phyto-Sanitary agreements and Technical Barrier to Trade agreement. As food is the common necessity of mankind across the globe therefore trade in agricultural field requires additional precaution in terms of quality and safety of items in comparison with trade in other fields.

To liberalize the trade, all member countries are removing quantitative restrictions for trade across the borders. In view of this, the major criteria to decide the acceptance or rejection of food commodities is its status with respect to quality and safety requirements. With this objective, Codex Alimentarius Commission, under WTO has been assigned the task of

formulating food standards in order to protect the health of the consumers and also to facilitate food trade. Considering the importance of codex standards in international trade, APEDA has procured codex standards (August 2000 from FAO Rome). The copies of these standards are available in the library of APEDA Delhi office.

*Apeda Update*

*Jan 2001*



**Scheme for Reimbursement of Pesticide Residue Testing charges for APEDA's schedule products**

Pesticide Residues are posing a great threat to the human safety thereby most of the importing countries are insisting on the production of certificate regarding the pesticide residue level in the food commodities in international trade. Keeping this in view, APEDA has come out with a scheme of reimbursement of expenses for testing of pesticide residue. Test report should clearly establish linkage between consignment procured and



the consignment being exported. The test has to be conducted in advance by taking samples of the produce in accordance with the pesticide sprayed at the field level.

This scheme for reimbursement of expenses incurred for pesticide residue testing is applicable for all APEDA's schedule products with immediate effect. The main conditions of the schemes are:

The test will be conducted for only those chemicals which are either banned or where there is a possibility of having higher residue levels than permissible. If any additional chemical has been tested, the reasons for the same many clearly be indicated. APEDA will reimburse expenses to the extent of 50% subject to a maximum of Rs. 2,000/- per sample. The laboratories identified by APEDA have agreed for the test charges amounting to Rs. 300/- for each pesticide tested, subject to a minimum of Rs. 1500/- per sample and maximum of Rs.3,000/-. The sample will be tested only from the approved laboratory. The payments shall be made on reimbursement basis.

Apeda Update

Jan 2001



## Potential for export of speciality Banana from South India

Speciality Banana varieties such as Dwarf Cavendish and Robusta

grown in the States of Andhra Pradesh, Tamilnadu, Karnataka and Kerala. Chekrakeli, Amutapani, Poovan, Hill Banana, Elakki Bale, Rasabale and Nendran offer scope for export by air. In order to improve the quality and availability of these specialities Bananas, APEDA has taken up a series of training programmes in Andhra Pradesh, Karnataka (January, 2001) and Kerala. Right climatic conditions exist for growing these tasty and flavourful Bananas. It is reported that next to Mango and Grapes, Banana from India offers tremendous scope for export. Maharastra and Gujarat also produce quality Banana.

Apeda Update

Jan 2001



## Funding by APEDA to M/s. APITCO, Hyderabad for the development of Fruit Processing Cluster at Chittor

At the instance of Government of Andhra Pradesh, the office of the Development Commissioner, Small Scale Industries (DCSSI), had commissioned a focused diagnostic study on the Chittor Fruit Processing Cluster, under the integrated Technology Upgradation & Management Programme (UPTECH). The study was assigned to the Andhra Pradesh Industrial & Technology Consultancy Organisation Limited (APITCO), which was identified as the principal

implementing agency for implementation of the Chittor Fruit Processing Cluster Development Programme. The implementation was envisaged to be spread over three financial years beginning 1999-2000.

The study focused on the current status of the fruit processing units in Chittor district and identified critical technology gaps. The study has suggested certain technology and market development interventions required to improve the economic viability of these units and has indicated the financial implication and the time - frame for an action plan. The interventions broadly related to and are classified as under:

- Technology.
- Common Facilities.
- Market Development.

APEDA has provided financial support for creation of Database on Marketing, Product Promotion in Overseas Market, Domestic Market Development.

APEDA has given assistance to APITCO in connection with Integrated Technology Upgradation & Management Programme (UPTECH).

Apeda Update

Jan 2001





TRADE ENQUIRIES

NAME & ADDRESS OF IMPORTER

Hussain E. Dabbous  
Sales Manager  
Al-Salam Partnership Co.  
PO Box 3171, Safat 13032,  
Kuwait  
Tel: 4338000/4341481  
Fax:4316031

AREA OF INTEREST

Chick Pea, Spices  
Frozen Meat,  
Curry Powder

e-mail:nobili@matavnet.hu

NAME & ADDRESS OF IMPORTER

Brassay Sandor  
Jagdfeld Hungaria  
3360, Heves Szalma-Tanya  
Hungaria  
Tel:00-36-36-346-407, 346-408  
Fax:00-36-36-346-068

AREA OF INTEREST

Mango Pulp

Tamer Dogan  
Tamay Gida Ltd.  
Ikitelli Organize Sanayi  
Bolgesi, Metal is Sitesi  
14 Blk No. 2, Ikitelli 34670,  
Istanbul Turkey  
Tel: 90-212-5499050  
Fax:5499051

Curry Sauces,  
Mixture Namkeen

Kencz Karoly  
1016, Budapest, Naphegy U, 36  
Tel:225-1117/1118  
Fax:212-4440  
e-mail:kencz@qwerty.hu  
Mobile: (06-02)334-7306

Indian Food Stuff

Agustin E.Giaquinto  
Transagen S.A.  
Antonio Beller 77-4th Floor  
Suite 405 Santiago  
Rep. Dde Chile  
Tel: 562-2352575/2352679  
Fax:2016383/2443205

Walnuts

Suresh Chaudhury (M.D)  
Marlin Impex  
1024, Budapest Margit Krt.  
15-17, 111/3 Hungary  
Tel:36-1-316-9252  
Fax:36-20-9852-621  
e-mail:jatin@mail.datanet.hu

Indian Food Stuff

Jose Luis Sanchez Sabater  
Hons, Snchez Sabater, L.L.  
Luis Braille 1 Entlo C  
30005 Marcia (Spain)  
Tel: 34-68-281335/281142  
Fax:281384

Pineapple Slices  
in can (50,60)

Podravaka International  
1053 BP Szepe U.5, Budapest  
Tel:36-1 266-2686, 36-1 338-4329  
Fax : 36 30 2489 626  
e-mail:dpros@podravka.hu

Dehydrated Vegetables

M/s Cognis Australia Pty Ltd.  
71-77 Taunton Drive  
Cheltenham, Vic, 3192 Australia  
Tel:61 39584 4588  
Fax:61 39584 8348  
Mobile: 0418596 103  
e-mail:pat.Rao@cognis.com

Dehydrated Onion  
& Vegetables

Arvydas Valcika  
EIDRA  
Tel : (3702) 260 705,332491  
Fax: (37099)247 75  
e-mail:el.p.cidra@takas.it

Mango Chutney  
Sauce

Information Agency,  
Inter Media Consultant  
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121835, Russia, Moscow Street,  
Arbat 35 Office  
Tel:248-2833/ 248-9147/248-0153  
e-mail: crkintuz@mail.ru  
web:www.intermedia.ru

Alcoholic Beverages and  
Food Items

Foldi Istvan  
Transzexpressz Kft.  
1146 budapeso, Francia U.55/A  
Tel :222-0317, 4-600-600/601  
Fax : 0630-9-418-847  
e-mail: sales90@matavnet.hu

Processed Food, Mango,  
Pineapple

Mr. Tibor Novak (M.D)  
NOBILIS, Rt. Hungary  
4700 Mateszalka, Ipariut 2  
Tel:3644/417-653, 3644/417-864,36 30/9287 392  
33 44/500 220 222

Dried Mango Bar  
Dried Pineapple  
Dried Cashew

Karsain Katalin  
4400 Nyiregyhza,  
Vasgyar U.9-13  
Tel: (42) 420-666/250  
Fax: (42) 420-666/250  
Saitai Krisztina  
Aleva international  
11-6722 Szeged,  
Nemestakacs U.15/A  
Tel :36(62) 555-020, 021.022

Mango

Dried Vegetables, Spices,  
Black Pepper, Herbs



Fax: 36 (62) 555-023, 252-03-99

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Pierro Crawley  
Strohmeyer & Arpe Co.  
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Short Hills, NJ 07078, U.S.A  
Tel: 973-379660  
Fax: 973-3798181

Ing. Alejandro Jausoro (G.M)  
Trading Argentina S.R.L.  
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Buenos Aires-Argentina  
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Fax: 5411-46616581

Mr. Ismail Ibrahim  
M/s. Waterval Indian School  
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Mr. Shanti Gokal  
M/s. Cosmopoltex.  
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Johannesburg, South Africa  
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(27-11)643-3421

Mr. Yuome Meyer  
Continental Meats  
534, Ridge Rd.  
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Telefax 031-2072873

Mr. Yacoob Vorajee  
Delhi-Delires, P.O. Box 21523  
Roshnee South Africa 1936  
Tel (016) 555 2284

Dried Mango,  
Pineapple Cubes,  
Litchi

Mango Pulp

Honey

Honey in Drum

Pineapples in Slices  
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2. American Soybean Association 168, Jorbagh, New Delhi-110003 Tel : -011-4651611, Fax :011 4651526 E-mail : asaasc@nbc.vsnl.net.in, Contact person :Virgil Midema / Suresh Itapu	Technical Bulletins on . Soy Products like Soya milk, tofu & soy snacks.
3. Brimco Engineering Works M-27/1, Street No.8 Anand Parbat Industrial Area, New Rohtak Road, New Delhi Pin : 110005 Tel:-011-5726347,2145040 Contact Person : B Khan	Food Processing machinery for FlourMills, Rice Mills. Oil Mills, Pulse Mills etc.
4. C S Aerotherm No. 137 Gandhi Bazar Mair Road Bangalore-560004 Tel :-080-6506066 , 6520665 Fax :080-6520665 E-Mail:- csmedica@giasbg01.vsnl.net.in	Rack oven for Bakery
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6. Gemini Engineers 12 B, Sharma Apartments 138/1, Prendirghast Road, Secunderabad, A.P.500003 040-7843247, 7810750 E-mail : info@gemni.com Contact person: Amrita Pamnani	Machinery for ice-cream cone, wafer biscuit etc.
7. Indapol Food Processing Machinery Pvt. Ltd. Plot No.28, Sec-27 C, Faridabad Contact Person: V.K.Gupta C.E.	Flour milling machinery
8. Kat Industrial Consultants Pvt. Ltd. World Trade Centre 38, GF Barakhamba Lane New Delhi-110001. Tel : -011-3413183, 2942632, 9810085161, Fax : -011-3273771 E-mail :- katcon@del12.vsnl.net.in	Industrial process technology books.



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Mr. P. P. S. Dhillon, Immediate Past President of AIFPA recently retired from Nestle India Ltd. after a long and fruitful innings and is now Chairman of Alpha Lasertek (India) Ltd. His new address is as follows :-

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**Res.** : Mr. P. P. S. Dhillon  
House No. 815, Secotr 14  
Faridabad - 121 002  
Phone : 915-224629



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## BOOK REVIEW

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**"Food Safety-a Techno-legal Analysis" by S. N. Mahindru and published by Tata McGraw-Hill Publishing Co. Ltd., New Delhi, pp.254.**

The Book has been divided into 4 parts and 8 chapters covered in 264 pages including case studies and index / bibliography etc.

The author has made efforts to cover all the problems related to Food Safety from consumers point of view and sound development of the Food Processing Industry in India.

The subject has been analysed exhaustively. The author has a long experience of three decades of existing practices. His views on the finalisation of Food laws and working of the Food legislative body is a positive criticism of the system and well appreciative of the efforts required to be made to make matters easy of comprehension and clarity to the courts to decide various issues referred to them. Part one of the book deals with P.F.A 1954 and lays stress on systems of analysis and Food Inspector's reports and penalties imposed on the basis of the reports

from ill-equipped laboratories and lack of standardised analytical systems.

Part two is a detailed description of PFA rules 1955 which give a very practical view point to the students, technocrats and industry alike. Various views/ opinions on each specific rule and facts on the case law on various food products and additives in juices and the natural colour in the food products are indicative of the knowledge and depth with which the author has worked on the implementation of Food Laws and Food Safety for the consumer foods. The author's opinion that there is a need to work on some of the provisions due to increasing public awareness and public perceptions about the Food Safety is a good suggestion. The Drinking Water which so far was not part of Food Laws needs a categorisation in the Food Laws since large quantity of pesticides and bacterial growth are found even in the drinking water supplied by Municipal authority. The Government has now included in the Food Laws the packaged drinking water sold in the market. The water supplies by municipal systems also requires to be brought under food safety regulations.

Part three Chapter 7 covers definition of standards of quality in

some of the consumer items like Carbonated Water, Baking Powder, Starch, Arrowroot, Sago, Hing or Hingra (asafoetida), Spices and condiments. Seeds in several products of daily use have been covered with great care. Without uniform standard methods of analysis and well equipped laboratories it is very difficult to test the food stuffs and find uniform results. Safe Foods are well understood and in the absence of such standardised methods it is difficult for the legal system to effectively interpret them.

In the Part four, exports of two products - the Indian Sea Food and Indian Spices are covered.

The book is a great attempt but needs to include some of the important aspects like packaging technology, import of Processed Food Products, Food Safety, water and the area of concern like Eco-Friendly manufacturing / processing practices as well as sanitary and phyto-sanitary measures to be adopted by Indian Food Industry. This authentic work on Food Safety has been attempted very exhaustively by the author and needs to be commended.

K. P. Sarin



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# RESEARCH ARTICLE

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## PREPARATION AND PHYSICO-CHEMICAL PROPERTIES OF GREEN CHILLI PASTE

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### ABSTRACT

The present study was undertaken to develop a shelf-stable green chilli paste. Pretreatments had a pronounced effect on the Hunter colour values in terms of L, a and b of green chilli puree. It was observed that hot water blanching degraded maximum green colour while sample blanched in sodium hydroxide containing 0.25% magnesium carbonate retained the maximum green colour in terms of the Hunter -a values. The thermally processed paste contained 7% sodium chloride with a pH value of 3.8. The product was found to be shelf-stable at room temperature for six months and microbiologically safe during entire storage period.

### INTRODUCTION

The concept of seasoning - the modification of foodstuff through the addition of ingredients began thousands of years ago, elementally with the use of herbs and spices (Underriner, 1994). India continues to occupy the top position in the world supply of spices and condiments. Although discovered relatively recently in spice terms, chillies have become the most widely used of all the spices. Although they can be used fresh, either green or red, the normal way to use them is in dried form either whole, crushed or ground (Clarke, 1994). The world trade in spices is about 0.4 million tonnes worth

1.5 billion dollars (Pruthi, 1998). During 1997-98, India exported 0.194 million tonnes of spices.

Literature on green chilli and its products is limited. Luhadiya and Kulkarni (1978) reported dehydration of green chilli. But ironically, the delicate odour and green colour of fresh green chilli is not comparable to that of the dried form. So there is an urgent need to explore other processing techniques to process the spice vegetables which can retain the fresh flavour of spices. Consumers of fruits and vegetables are putting increased emphasis on convenience as well as texture, flavour and

appearance and this has led to a new area of food processing known as minimally processed foods (King & Bolin, 1989). Paste is one such alternative, which would retain the delicate, spice odour of green chilli (Ahmed, 2000). Nowadays in the Indian market, several commercial spice vegetable pastes are available for household consumption but there is no consistency in colour, flavour and shelf life of these products (Giridhar et al., 1996). In this study, an attempt was made to prepare a processed green chilli paste, which would be acceptable to the consumer with maximum retention of quality attributes and shelf-stable at room temperature.

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2. Nijjer Agro Foods Limited, Amritsar



## MATERIALS AND METHODS

**Preparation of paste :** Green chillies (Variety: CH-1) were procured locally, washed in running tap water to remove the adhering dust particles, destalked manually and pretreated in hot water, 1% and 1.5% lye solution and solution containing 1% lye and 0.25% magnesium carbonate (Table 1) at 100°C for 3 min followed by washing in cold water to remove the excess alkali. The grinding was done in a grinder and passed through a sieve of 14 mesh to obtain a uniform consistency. Sodium chloride was added at 7% to puree to increase the total solids while the pH was lowered to 3.8 by addition of desired quantity of 30% (w/v) citric acid solution. All the ingredients were mixed in a food processor for 2 min. The prepared paste was heated in a steam kettle to 80°C and hot filled in sterilised glass bottles (H/D=1.82). The glass bottles were immediately cooled and kept at room temperature (25-38°C) for storage studies.

**Physico-chemical analysis :** The proximate composition of the prepared paste was determined according to AOAC methods (1984). The pH and TSS of the product in terms of °Brix were measured using a pH-meter (Equiptronics, India) and a refractrometer (Atago, Japan) respectively. Bostwick consistometer (Central Scientific Co., Chicago, USA) was used to measure the consistency of the paste while the

apparent viscosity was measured using a Brookfield DV II+ digital viscometer (Brookfield Engineering Laboratory, Inc. Stoughton, MA, USA) at room temperature using S-4 spindle as per method described by Ahmed (1998). Colour measurement in terms of *L* (100 for white and 0 for black), *a* (-80 for green and 100 for red) and *b* (-80 for blue and 70 for yellow) was carried out with a Hunter Colorimeter, model D25 optical sensor (Hunter Associates Laboratory Inc. Reston, VA, USA). Hunter colour *L*, *a* and *b* values measured using fresh ground green chilli sample were considered as the standard. Total chlorophylls were determined as per method described by Ranganna (1986) using a Shimadzu spectrophotometer (Schimdu Corporation, Japan). Sodium chloride was determined following the method described by Ranganna (1986). Each experiment was replicated thrice and the average values were used for the analysis.

**Sensory evaluation :** The sensory panel consisted of students, staff and the faculty members of the Department. A total of 20 individuals (10 male and 10 female; age range 20-50 years) participated and the selection was based on their interest and consumption of green chilli. Four sensory attributes namely colour, flavour, texture and overall acceptability were considered for the evaluation. The panel assigned a score to each attribute according to a 9-point Hedonic scale (Stone & Sidel, 1993).

**Microbiological analysis :** The samples were examined microbiologically in terms of standard plate count (SPC), *coli-forms*, *lactobacillus*, yeast and mold following the procedure of International Commission on Microbiological Specifications (ICMSF, 1978).

**Statistical analysis :** Statistical analysis of the data was performed by using the method described by Panse and Sukhatme (1995).

## RESULTS AND DISCUSSION

In order to inactivate enzymes and to retain colour, destalked fresh green chillies were pretreated. Hunter *L*, *a* and *b* values of fresh chillies were 29.29, -5.68 and 14.26 respectively. Effect of selected pretreatments on green chilli is reported in Table 1. The effect of pretreatment on Hunter colour values was not significant ( $P>0.05$ ). Loss of green colour was maximum when green chillies were blanched in hot water only; Hunter - *a* value decreased from 5.68 to 2.35. Lye treatment in general resulted in increased retention of green colour and the retention was maximum while green chillies were blanched in solution containing 1% NaOH and 0.25%  $MgCO_3$  ( $-a = 4.72$ ). Excessive leaching of green pigment was observed when green chillies were pretreated in 1.5% NaOH solution. Green chillies were therefore pretreated in solution containing 1% NaOH and 0.25%  $MgCO_3$  at 100°C for 3 min before pureeing.



The decrease in Hunter-a value during pretreatment was due to degradation of heat labile green pigment (chlorophyll) to pheophytin : a and b due to shift of magnesium ion ( $Mg^{++}$ ). Similar observation was reported by Rocha et al. (1993) for colour retention of basil during drying. However, blanching of green chilli in a solution of  $MgCO_3$  increased the formation of chlorophyllides and decreased the conversion of both chlorophyll and chlorophyllides into pheophytins and pheophorbides, respectively and hence retention of green colour was more (Clydesdale et al., 1968).

The physico-chemical characteristics of the prepared green chilli paste are shown in Table 2. The prepared paste falls in the category of minimally processed food since it contains high moisture (72.2%) as well as very little alteration from the basic ingredients (Giridhar et al., 1996; Ahmed et al. 2000). The pH of the product was lowered to 3.8 from the initial value of 5.2 by addition of desired amount of 30% citric acid solution so that pasteurization was sufficient as a heat process. Low acidity of the paste also reduced the chance of the growth of the micro-organisms. Chlorophyll content of the paste was 1.75 mg/L. The consistency and apparent viscosity at room temperature were 1.4 cm and 0.45 Pa.s respectively.

The sensory characteristics of green chilli paste used in chilli-paneer are represented in Table 3. The mean value for colour, flavour,

consistency and overall acceptability were 6.85, 7.06, 6.70 and 6.68 respectively. The statistical data revealed that the green chilli paste was highly acceptable.

Table 4 represents the microbiological characteristics of the paste during 6 months storage. The standard plate count increased from 440 to 990 CFU/g during 6 months storage at room temperature. No growth of *coliform* and *lactobacillus* were below the prescribed limit. Similar observations were found for yeast and mold. It could be concluded from these observations that prepared green chilli paste stored at room temperature was microbiologically safe up to 6 months storage.

The change in green colour in terms of Hunter - a values of the stored product at room temperature is shown in Fig.1. Degradation of visual green colour (as represented by decreased magnitude of Hunter colour-a value) was observed during storage. The Hunter colour-a value reduced from 4.72 to 2.46. This may be due to the effect of light and temperature on chlorophyll of green chilli paste during storage.

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Table 1 Effect of blanching treatment on Hunter colorimeter values

Blanching treatment	L	a	b
Water	28.34	-2.35	13.09
1%lye	30.37	-3.06	13.97
1.5% lye	30.25	-3.02	13.76
1%lye+0.25% MgCo <sub>3</sub>	32.92	-4.72	14.29

Table 2 Physico-chemical Characteristics of Green Chilli Paste

Parameters	Value
Moisture content,(%)	72.2
TSS, °Brix	25.5
Total ash, (%)	7.8
Sodium chloride, (%)	6.5
pH	3.8
Acidity,(% citric acid)	1.2
Magnesium carbonate,(%)	0.25
Apparent viscosity (Pa.s)at 100 s <sup>-1</sup>	0.45
Consistency, (cm)	1.4
Hunter-a Value	4.51
Chlorophyll,(mg/L)	1.75



Table 3 Sensory evaluation of green chilli paste used in chilli-paneer(n=20)

Quality attributed	Mean value	Standard deviation	Standard error
Colour	6.85	0.79	0.23
Flavour	7.06	0.63	0.18
Consistency	6.70	0.87	0.25
Overall acceptability	6.68	0.71	0.22

Table 4 Microbiological data on green chilli paste during storage

Storage (month)	SPC(CFU/g)	Coliform/g	Lactobacillus/g	Yeast & mold/g
0	440	Nil	Nil	8
2	520	Nil	Nil	12
4	740	2	4	56
6	990	8	7	84



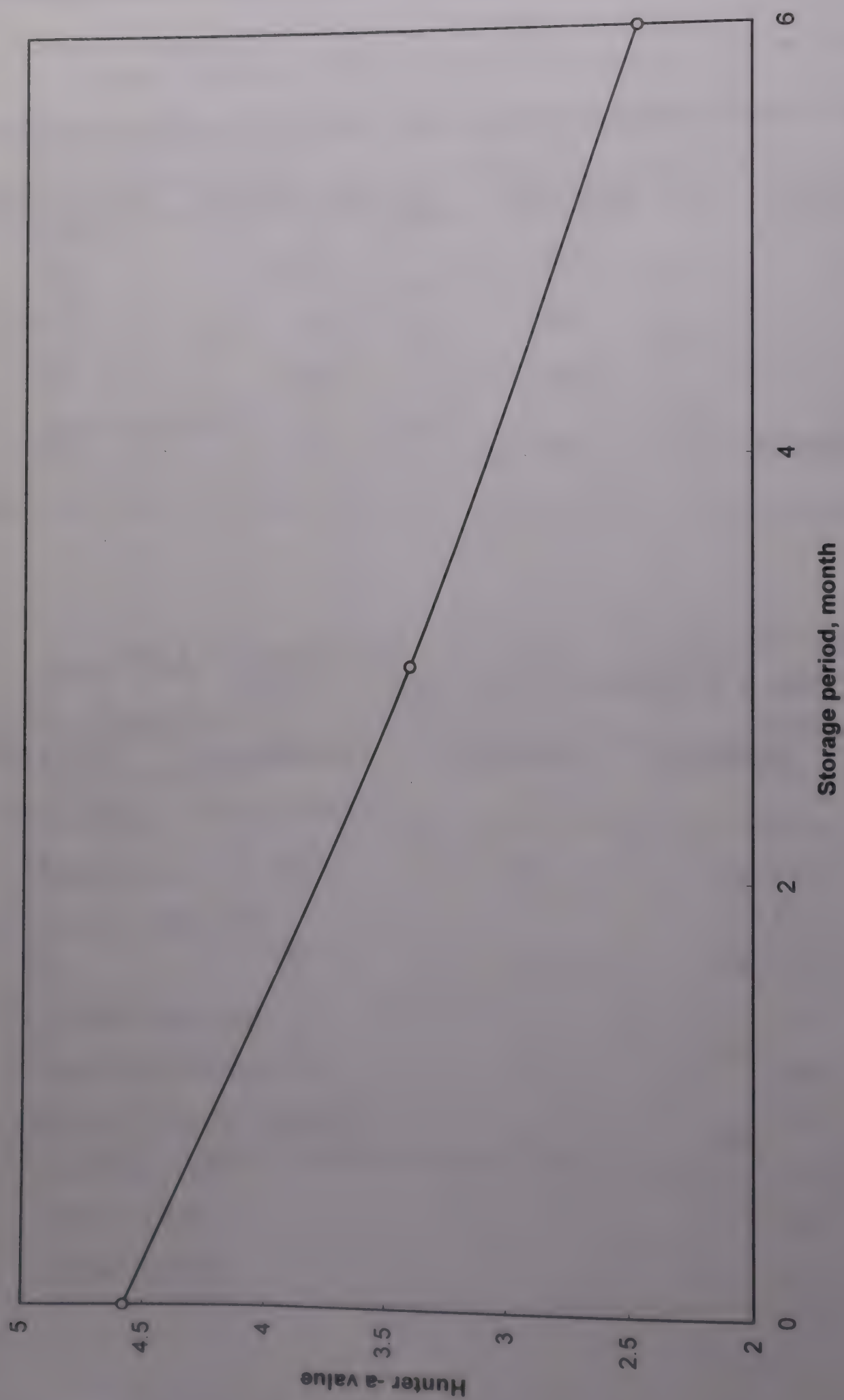


Fig. 1. Effect of storage period on Hunter -a value of green chilli paste at room temperature.



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# REVIEW ARTICLE

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## PROTEIN AND AMINO ACIDS FROM CELLULOSIC WASTES OF AGRICULTURE AND FOOD INDUSTRY - A REVIEW

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### ABSTRACT

Agricultural activities and food processing operations generate a great quantity of cellulosic wastes all over the world and these wastes remain either unutilized or under-utilized in most of the cases. These cellulosic wastes of agriculture and food industry origin have got immense potential to be utilized for production of protein and amino acids for human consumption and for enrichment in foods & feeds. The present review discusses in detail the scope, sources & composition of the cellulosic wastes; the property of cellulose, hemicellulose & lignin; their conversion into amino acids & protein for human foods and amino acid- & protein-enriched feeds for animals. Research findings in the area of utilization of grasses, cereal straws, cereal husks, cotton seed hulls, corn cobs, sugarcane bagasse, vinasse, tea waste, coffee waste, wastes of various fruits such as citrus, banana, apple, grape, date, etc., wastes of several vegetables such as cabbage, carrot, beet, brinjal, waste soybean residue and waste tapioca residue have been highlighted. The protein and amino acid composition of several microbial biomasses has been enlightened. Problems associated with the economic utilization of the cellulosic waste for protein & amino acids production and feed enrichment and future prospects therein have been discussed.

### INTRODUCTION

Cellulose is the most abundant natural material in the world, which produces about  $10^{11}$  tonnes of cellulose annually. Unlike other natural resources like petroleum and minerals, it is replenishable by photosynthesis (Soltes, 1980). Its main uses are in the form of wood, papers, boards, clothes, foods and feeds. A major portion of cellulose remains unutilized and goes waste. The cellulosic wastes generated from

forest resources, waste paper and board, pulp industry, textile industry, agriculture and food industry contain, in addition to cellulose, hemicellulose, lignin, extractives and inorganic compounds (Virkola, 1975). The cellulosic wastes from agriculture and crop residues contain 31-60% cellulose, 11-38% pentosans and 12-28% lignin. The waste cellulosic materials can be used to generate value-added compounds or

ingredients of foods. Production of protein and amino acids for human consumption and protein-enriched feeds for domestic animals from the cellulosic waste materials of agriculture and food industry is an important area of research for the wellbeing of the mankind.

**SOURCES :** Major cellulosic wastes from agriculture include straw, stalk, stem, chaffs, stubbles, damaged grains, fruits and vegetables, leaves, cobs and major cellulosic wastes



from food industries are fruits, vegetables, grains after post-harvest losses and post processing residues like skin, peel, seeds, leaves, bunches, husk, bagasse, vinasse, pomace, etc. Some of these of present significance have been listed along with their composition in Table-1 (Donefer et al., 1969; Srinivasan and Han, 1969; Virkola, 1975; Southgate, 1976; Zaborskey, 1981 and Marsden, 1986).

**SCOPE :** The utilization of wastes is very poor in under-developed as well as in developing countries like India. On the other hand, the generation of wastes in these countries is too high due to poor pre-harvest, harvest and post-harvest handling of the crops. India produces about 125 million tonnes of fruits and vegetables and 200 million tonnes of food grains generating around 200 million tonnes of agricultural waste per annum. The post-harvest loss of fruits and vegetables in India ranges from a minimum of 5% to a maximum of 100% (Ashok, 1998) and in case of fruits alone it amounts to 20-30% of total produce with a loss of Rs. 3000 crore annually (Food Digest, 1995). In the USA overall wastage for grains, fruits and vegetables are 32%, 23% and 25% respectively (Food Digest, 1997) with the total loss of  $940 \times 10^6$  tonnes on dry matter basis (Humphery, 1975). Keeping in view the huge generation of the cellulosic wastes in a poor country like India in particular, their utilization into value added nutrient like protein

and nutritive protein- rich food would be a boon to the millions of under-nourished and malnourished populace of the globe.

### PROPERTIES OF CELLULOSE, HEMICELLULOSE AND LIGNIN

Before we discuss the production of protein and its structural unit amino acids from the cellulosic wastes, let us glance briefly at the properties of cellulose, hemicellulose and lignin of present importance. Cellulose is a structural and cell wall polysaccharide in the plant kingdom. It is a linear polymer of glucose units linked by  $\beta$ -glucoside bond. Lignin is a complex of three-dimensional polymer of phenolic and enolic origin, whereas hemicellulose comprises of celluloses and polyuronide hemicelluloses. Cellulose is insoluble in water but soluble in a number of solvents such as concentrated acids and inorganic solvents. Extensive pretreatment by chemicals and enzymes is often required to increase the accessibility of cellulose to these agents (Millet et al., 1975; Dunlap et al., 1976 and Chang et al., 1981). It may be mentioned that cellulose is the least degradable natural polymer due to its high molecular weight, high degree of structural order, insolubility, low surface area and its association with lignin and hemicellulose. Alkali treatment and enzyme action on cellulose disrupt chemically bound lignin. Alkali or petrochemical treatment, electron

irradiation and ball milling to a fine particle size increase enzyme activity and biodegradability of cellulose by various fungi. There are four types of degradation of cellulose, namely, hydrolytic, oxidative, microbial and mechanical degradation. Cellulolytic enzymes are mainly cellulase and cellobiase. Microorganisms capable of breaking down cellulose structure are fungi, bacteria and ascomycetes, which secrete cellulase enzymes. There is an approach to use 2 sets of microorganisms. One set of microorganisms will be cellulolytic breaking down cellulose to sugar, which will be effectively bioconverted to single cell protein (SCP) by a second set of microorganisms. SCP is a crude or refined source of protein whose origin is unicellular or multicellular organisms like bacteria, fungi, yeasts, moulds and algae. (Fig.1)

### CONVERSION OF CELLULOSIC WASTE INTO PROTEIN, AMINO ACIDS AND PROTEIN-ENRICHED FOODS & FEEDS

Cellulosic wastes of agriculture and food industry incur cost to the main product due to pre-harvest and post-harvest losses and / or due to their non-utilization and their disposal therefore. Protein and amino acids of various usages can be generated from these wastes and cost of production of the main item can be reduced. SCP production from cellulose has been suggested by Pamment et al. (1978), Callihan and Clemmer (1979) and Bellamy et al. (1969).



microbial production of protein, which can be fed to the animal without any harm to the live weight gain of the animal (Palmer, 1976 a & 1976b). Delignified cellulosic materials like sugarcane bagasse, Johnson grass, Prairie grass, sorghum bagasse, corn cobs and cotton hulls are used for production of protein by growing *Alcaligene faecalis* and a cellulase producing microorganism, most preferably, *Cellulomonas spp.* ATCC No. 21399. Barley straw has been converted by *Trichoderma viride* alone or a mixed culture of *T. viride* and *Candida utilis* into a protein product containing 21-26% protein, which is more than what we get from meat, fish, milk and majority of pulses.

Lignocellulosic waste material can be successfully bioconverted for protein enrichment of animal feeds (Hesseltine, 1972). Performance of a cellulolytic bacterium, *Chaetomium cellulolyticum* on various cellulosic materials was investigated by several workers. Sugarcane bagasse, a leftover fibrous residue after juice extraction from sugarcane, can be utilized to produce SCP by a bacterium, *Cellulomonas spp.* producing upto 60% crude protein content (Callihan and Srinivasan, 1973). Pretreatment or prehydrolysis of cellulosic waste is done to increase the rate and degree of microbiological digestion (Callihan, 1970; Han et al., 1971; Callihan and Dunlap, 1969 & 1971; Han, 1969; Brown and Fitzpatrick, 1976 and Kamikubo et al., 1981). Bagasse, if pretreated with alkali,

yields maximum protein by a *Cellulomonas spp.-Bacillus subtilis* mixed culture (Molina et al., 1954). Pretreatment of bagasse with alkali plus  $\alpha$ -irradiation, acid plus  $\gamma$ -irradiation and  $\text{NaClO}_2$  enables to produce biomass of *T. viride* and *Candida utilis* containing 35.5% protein and all the essential and non-essential amino acids in accordance with FAO reference (Azzam et al., 1990). Similarly corn cobs (Nazzenko et al., 1994), citrus wastes (Elisashvili et al.), tea waste (Kokhzeidre and Elisashvili, 1993) and soy milk residue (Lee and Kim 1992) can be utilized to produce biomass of several microorganisms containing varied quantity of protein. A considerable quantity of histidine and lysine amino acids can be produced from alkali treated sorghum husk, millet husk and banana stem (Dahot and Abro, 1994). SCP containing 37 -62% protein can be produced on a medium containing similarly treated rice husk (Dahot et al., 1994). *Rhodospseudomonas gelatinosa* can grow on wheat bran infusion as a substrate and produce significant quantities of protein and vitamins (Moo- Young, 1976). Some cellulolytic fungi are grown on pretreated cellulosic materials to yield suspended solids rich in protein (Moo-Young et al., 1979). The mycelial mass is found to be nutritious, digestible and non-toxic. This SCP compares highly with fodder yeast and soymeal in essential amino acid composition (Skogman, 1976). Stillage residues generated from alcohol fermentation industry

can also be utilized for production of protein upto 49% of mass. This has a potential use in human food and non-ruminant feed. High lysine corn residues from alcohol industry will produce stillage soluble with high lysine content (Wu, 1989).

Various fruits and vegetable wastes of aubergene, tomato, grape, apple, cabbage, carrot, beet root and watermelon are the substrate for lysine production by *Brevibacterium spp.* An aubergene waste, watermelon waste plus aubergene waste and carrot waste plus beet root waste yield 11, 25.5 and 26% of lysine / litre respectively (Trifonova et al., 1993). *Aspergillus niger* is able to grow on orange peel, green and overripe banana and carrot waste to produce a crude protein of 20-30% (Sethi, 1978). Protein content of apple pomace can be enriched by various mixed cultures of cellulolytic fungi and yeasts and it can be effectively used as animal feed. Dried pomace and pectin extracted apple pomace is enhanced upto 20% and 17% protein content respectively (Bhalla and Joshi, 1994). Likewise leached sugar beet pulp waste may be enriched upto the protein content of 40% by *Trichoderma aureoviride* in solid state column fermentation (Illanes et al., 1992). Edible fungi, *basidiomycetes*, grown on citrus waste produce biomass with 18-19% protein (Elisashvili et al., 1992). A little above 90% of cellulose mixture of extracted grape waste and pressed apple pulp is converted to get a product containing 35%



protein (Kuzmanova et al., 1991). A maximum protein enrichment upto 32-34% protein is possible by utilizing kinnow-mandarin wastes of peel, pulp and seeds used as media for fungi, namely, *Chaetomium globosum* and *Sporotrichium pulverulentum* (Grewal et al., 1990). Various others such as wastes of banana (Humphrey et al., 1979), date (Nancib et al., 1997), sun-dried tapioca residue (Kunhi et al., 1981) and soybean residue are used to generate SCP. Coffee processing waste, which poses severely disposal hazards, yields dry solids having about 56% protein with the help of various fungi (de Cabrera et al., 1976 and Rolz, 1975). Egyptian vinasse has been successfully recycled for microbial protein production (Selim et al., 1991). According to the work of Krishna and Chandrasekaran (1995), native commensal microflora in cabbage can economically enrich its protein content and this protein-enriched cabbage is a source of sound feedstock (Table-2).

It has been well-established that most plant proteins are often deficient in lysine, methionine and tryptophan amino acids whereas SCP has an amino acid profile very similar to that of the best protein of animal origin such as milk or meat. Moreover SCP in an isolated state is readily assimilable by both human and animal body. Quality of single cell protein is then within the range of some animal proteins. Beside these, it is a desirable source

of essential B-vitamins and minerals too (Table-3).

Cocultures of cellulolytic and non-cellulolytic microbes have demonstrated higher yield and productivity than their individual monocultures. It is because the cellulase enzymes from cellulolytic species catalyze cellulose to produce glucose, which in turn is fermented by non-cellulolytic ones. The fungal mass grown on various crop residues is found to be a safe and acceptable food product as implied by toxicity trials and food textural studies. A consumer survey on acceptance of SCP has been conducted and described by the researcher.

## PROBLEMS AND PROSPECTS

Problems on the way of economic utilization of celulosic wastes are the lack of rapid enzymatic hydrolysis of cellulose, lack of rapid growth of microorganisms on celluloses, lack of high catalytic power cellulase enzymes, the high cost of pretreatment and the presence or association of other substances with it. To improve the efficacy of cellulose breakdown, one can search for more active cellulases or develop cheap methods for pretreatment of the substrates. Manufacturing cost of SCP is very much dependent upon the cost of carbon and energy source to the producer of SCP products. Raw material cost of bagasse ranges from 17-26% of total cost of SCP production. It is reported that protein generated by bacteria grown on cellulose is much

cheaper than many other conventional proteins as from beef, chicken, eggs, fish, cheese, etc. (Abbott, 1966 and Wang, 1968). The cost associated with the collection and transportation of wastes will be excessive if SCP production plants are far away from waste generation site. That is why cellulosic wastes have received a great attention as possible feed-stocks on the assumption that raw material costs from agriculture and lumber wastes are negligible (Blanch and Sciamanna, 1980). It has been reported that economies derive from the fact that the cost of carbohydrate substrate obtained from the hydrolysis of crops and forest residues for protein production is much cheaper than that obtained from grains or other high grade food material (Moore, 1977 and Solomons, 1976).

## CONCLUSION

The agricultural farms and the food processing units, which generate a massive quantity of cellulosic wastes can pay their attention to utilize these wastes to produce protein and amino acids for man and protein-enriched foods for the domestic animals. These as byproducts may earn revenues and hence bring down the cost of production of the principal product. On the flip side, both the agricultural farm and the food processing industry usually face the challenge of waste treatment and their disposal. The problems associated with waste treatment and disposal, which are thought



unmanageable can be overcome creditably by salvaging the cellulosic wastes for production of protein, amino acids and protein-enriched foods and feeds.

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Table-1: Composition of Cellulosic Wastes (g/100 g dry matter)

Cellulosic wastes	Cellulose	Lignin	Hemicellulose
<b>1. Agricultural Residues</b>			
Barley straw	44	7	27
Oat straw	41	11	16
Rice straw	33	7	26
Sorghum straw	31	11	30
Wheat straw	39	10	36
Cotton seed hulls	59	13	15
Sugarcane bagasse	40	13	29
<b>2. Fruits and Vegetables</b>			
Apple	2.9	Trace	5.8
Banana	1.3	0.93	3.83
Lemon	-	35	-
Orange	-	14	-
Pineapple	-	7.64	-
Strawberry	3.6	8.4	10
Potato	1.2	Trace	9.2
Carrot	12.9	"	19
Cauliflower	13.4	"	13
Cabbage	8.9	4.3	26
Tomato	9.1	5.3	11
Peas	14	2	36
<b>3. Seeds</b>			
Barley	5.3	-	-
Corn	2.4	-	-
Sorghum	2.7	-	2.5
Oat	11.9	-	-
Peanut	2.8	-	2.5
Wheat	2.1	-	-



Table-2 : Protein content of Biomass (Enriques and Rodrigues, 1983 ; Han et al., 1971 ; Krinstense, 1978 ; Chang et al., 1981 ; Khor et al., 1976 ; Reade and Gregory, 1975; Moo-Young et al., 1979 ; Macris and Kakke, 1975 ; Gregory et al., 1978; Han and Anderson, 1975 and Worgan et al., 1976)

Microbial Biomass	Substrate	Composition (g/100 g dry matter)	
		Protein	Fat
A. Bacterial Biomass			
<i>Cellulomonas</i> sp.	Bagasse	58	-
<i>Cellulomonas</i> sp.	Bagasse	87	8
<i>Alcaligene</i> sp.			
<i>Cellulomonas</i> sp.	Alkali-treated	6.8	-
<i>Alcaligene faecalis</i>	Rye-grass		
	NH <sub>3</sub> -treated	9.5	-
	Rye Grass		
<i>Cellulomonas</i> sp.	Barley straw	10.6	58-66
<i>Candida utilis</i>			
<i>Bacillus</i> sp.	Rice hulls	28	-
<i>Pseudomonas</i> sp.	4% NaOH treated	19	-
<i>Chaetomium cellulolyticum</i>	rice straw		
	4% NaOH treated	20-24	-
	Corn stover		
	3% NH <sub>3</sub> treated	17	-
	corn stover		
B. Filamentous Fungi			
<i>Aspergillus fumigatus</i> I21	Cassava extract	31.5	12.2
	Cassava	27	-
<i>Chaetomium</i>	Crop residues	-	10
<i>Cellulolyticum</i>			
<i>Fusarium monoliforme</i>	Carob extract	30	5
<i>Rhizopus chinensis</i>	Cassava extract	37	-
<i>Sporotichum album</i>	Cassava extract	54	6-12
<i>Aurebasidium pullulans</i>	Acid-treated		
<i>Candida utilis</i>	And NH <sub>3</sub> -	14	-
<i>Trichoderma viride</i>	neutralised	12.4	-
	straw	10.9	-
<i>Fusarium semitectum</i>	Oat husk	11	-
	Sugar cane bagasse	5.6	-
	Cocoa shell	5.9	-
	Spent hops	5.9	-



Table-3. Essential Amino Acid Content of SCP (Amino Acid/100g Protein)

Amino Acid	Cellulomonas Cell protein	FAO References Protein	Wheat flour	Beef
Arginine	9.21	-	4.2	7.7
Histidine	2.30	-	2.2	3.3
Isoleucine	4.74	4.2	4.2	6.0
Leucine	11.20	4.8	7.0	8.0
Lysine	6.84	4.2	1.9	10.0
Methionine	1.86	2.2	1.5	3.2
Phenylalanine	4.36	2.8	5.5	5.0
Tyrosine	2.67	2.8	-	-
Threonine	5.37	2.8	2.7	5.0
Valine	10.71	4.2	4.1	5.5

Sterilisation (Optional)



Pretreatment (Enzyme/Alkali/Acid/Irradiation)



Washing



Fermentation / Conversion



Cell Sparation and Centrifugation



Washing



SCP

Fig. 1 Simple Flowsheet of Production of SCP



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## SPECIAL ARTICLE

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# SUSTAINABLE FOOD PROCESSING THROUGH INDIGENOUS TECHNOLOGIES FOR VALUE ADDITION FROM FARM TO CONSUMER\*

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The Post Harvest Technologies in the area of Fruits and Vegetables obviously have to match with the production of this perishable commodity to reach the consumer. It is a great challenge and it is this challenge that always keeps the scientists, the technologists and the engineers attentive in looking for innovative methodologies and technologies towards making this happen with cost effectiveness built into it and at the same time encouraging the value addition and the byproduct utilization of these commodities. We also today have a challenge in front of us in terms of quality parameters which the world is bench marking for a common harmonization protocols for the global market. This means that we need to look at the entire chain of farm to consumer wherein the quality parameters could be earmarked for a thorough performance of the end product. This is even a greater challenge and also gives an excellent opportunity for the entire chain of operations to involve the farmer and the grower all the way to the consumer. It is here that the organizations like CFTRI in conjunction with

other organizations such as ICAR, IIHR, Academia, Universities and other major institutions should march forward in the "Team India synergy" for a more effective and sustainable protocol for India.

For a successful Food Processing sector in India various aspects such as quality control, quality system and quality assurance, the constituents of total quality management, should function in a horizontal fashion for total success. These are vital today, if one has to reach the world market and at the same time realizing that India itself is one of the big markets. The process of quality control starts from raw materials, process design, product composition, packaging, storage, distribution, consumer preparation and feedback. It should involve critical points, harmonization with food laws, implementation of systems, creative innovation, validation, verification and documentation. One should also look at the statistical quality control, the statistical process control, the path involving process development and horizontal analysis, all of which need to be continuously improved. The quality

engineering should be result driven and not target driven, with commitments from leadership and underpinning to training and retraining as well as focus on needs and requirements of the consumers.

The total quality management requires a strategic planning, knowledge worker management as well as their involvement, constant reorganization and rewards system based on specific measurements and recycling operation of each quality steps for a total success. The role of suppliers, consultants and consumers should be given due weightage as the alliances will work best provided these are made strategic and operative on multiple levels. It is necessary to look for innovative technologies, and even co-operation with competitors who are known for high level technologies for better change in the system as well as to reduce developing time of processes and products. Today, the confidentiality and secrecy clauses have emerged due to a very strong competition across the world, especially on quality aspects. Documentations, quality manual, operating procedures as well as protocols for all procedures and

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strict monitoring of the quality are vital to automatically lift the industry to higher levels. Need exists for holistic approach on quality control management from "farm to consumer" and the quality could keep on improving itself, provided everybody in this system participates and also makes sure that it works on a day-to-day basis.

## 1. Utilization of Residues, Byproducts and Wastes - can be a boom to Indian

### Food Processing Industries

These components are generally discharged as such in the nature by cottage and small scale industries in many parts of the World. Their gainful utilization not only leads to value-addition but also alleviating the problems of environmental pollution. For example, CFTRI had developed a process for curried orange peel, which can be used as an adjunct with many Indian breakfast foods. Another example is the recovery of lecithin from rice bran or soybean oil sludges. Utilization of whey from milk processing industries for products of industrial importance can also lead to prevention of environmental pollution. Such avenues need to be examined especially in terms of cost of utilization avenues and that of the value added products for a global market.

The output of the waste from food processing plant can be reduced both in terms of volume and strength of organic matter. For example, about 20 percent of the

starch in cassava is unrecoverable due to inefficient rasping of the cells and it ends up in generation of cassava fibrous residue which contain 40-60 per cent starch on dry weight basis. However, total starch from cassava can be extracted through enzymic means. Similarly, the volume of stillage which emanates from distilleries can be reduced by employing advanced fermentation strategies. These aspects need to be looked into as one of the promising solutions.

The demand of nutritious and hygienic food with desired organoleptic attributes is on ever increase in the recent years. The population of the villages/towns/cities has also realized the essentiality of the protection of the environment. The sole purchaser of the processed food product is the consumer and hence food processing industry has to honour the views and demands of the consumer for survival. The issues on hygienic quality and safe processed food as well as protection of the environment thus dictate total efforts of food technologists and food processing industries in meeting these expectations of the consumers.

## 2. Food Processing Plant and Machinery Industry : Status and Vital Needs

Tremendous developments have taken place in Europe, U.S.A., Japan, Australia and New Zealand and also in Korea in the area of food processing plant and machinery. A number of significant

developments have paved way for the production of a wide range of food processing machinery, conforming to high sanitary standards. Development of different grades of stainless steel and the type of surface finish that is possible on this metal, new range of plastic construction materials, cleaning techniques, automation, continuous operations and aseptic processing techniques are some of the factors. One may notice that many of these developments are yet to make their entry into the Indian food machinery scene. This has been the main reason for the rather less quality of Indian food processing machinery barring a few exceptions. The consumption of processed foods is itself a rather recent trend in rural areas and naturally the developments in the food machinery industry is also slow and now it has to take a leap.

Indigenous machinery needs of the food industry in India, is being met by the following categories of equipment manufacturers:

- a) Dairy machinery manufacturers, most of them with adaptable technology and design back up. They also serve the requirement of fruit juice processing industries to some extent.
- b) Chemical process machinery manufacturers have both indigenous know-how and global know-how. These



machines cannot be straightway adopted in the food industry and need modification.

c) Specialist manufacturers in selected areas, like sugar manufacture, paddy processing and solvent extraction which cater mainly to the primary processing sector.

d) A small number of fabricators, in the small-scale sector exist with indigenous know how, who have evolved their own designs over the years.

Few of these manufacturers are engaged in rapid development of new lines of plant and machinery to suit the changing industrial, agricultural and processing conditions and Indian eating habits, at the same time meeting the international hygienic standards. Most of them do not have the infrastructure needed for such developments and it is here the institutions like Central Food Technological Research Institute bridges the gap. A vast gap exists specially for processing Horticultural Products and selected export food commodities.

### **3. Special equipment development needs and how much automation?**

Another agenda that comes to my mind is automation. How much automation is needed? I guess India probably requires a fair blend/mix of using the large human resource and also modern computer automation to ensure that every industry supports more jobs and at

the same time has a latest semi-automation equally built into it. I guess this has to be a separate "Indian Model" which hitherto we have not addressed, however it deserves to be addressed in depth.

Though the need is for the overall growth of the food machinery industry sector, which is still in its formative stages, and developments are needed in all types of machinery and equipment, some technology areas need special attention. Some of these are as follows:

#### **a. High speed specialized centrifugal separators :**

A Good number of industries need efficient centrifugal separators. Nozzle and self-cleaning/ desludging disk bowl type centrifuges have application in dairy, oil refining, protein extraction and many other industries. Besides, manufacturing difficulties, a thorough understanding of the dynamics of the machines is vital for manufacturing these machines. Apart from a few models of centrifuges for cream separation in the dairy industries, no other type of disk centrifuges are manufactured in India, though they have a very high potential.

#### **b. Large capacity spray drying and roller drying plants:**

A number of industries, specially the dairy products, baby foods, instant coffee and tea industries need efficient spray and roller dryers, which are manufactured indigenously. There are certain

engineering problems, which need the attention. The authentic stainless steels, commonly used in India are not hardenable by heat treatment. Drum dryers need hard and perfectly cylindrical surface. Cast SS drums with hard chromium plating, can serve the purpose. However, a lot of R&D is required in this direction and it needs urgent attention

Similarly, the centrifugal atomizers employed in spray dryers also need careful design and fabrication. Indian engineering industry is really capable of developing the atomizers and other components of spray dryers. Sustained efforts are on the anvil and can make an impact.

#### **c. Evaporation and aroma recovery plants :**

Fruit juice concentrate production requires speciality equipments. Many of the fruit products are exported from the country. The technology is not too complicated for the Indian engineering industry. Application of energy saving techniques like vapor recompression and multi effect evaporation are employed in indigenous equipments in other chemical and dairy applications. R&D on right types of evaporators with aroma recovery was carried out by R&D institutions nearly a decade back. The manufacturers need to take it to the processing sites through appropriate marketing.

#### **d. Specialized energy efficient heat exchangers :**

Indian food industry use mostly



tubular heat exchangers for many of thermal processes. Plate heat exchangers (PHEs), and scraped surface heat exchangers (SSHEs), are known for uniform heating and smaller heating times, which are of vital importance in food processing. It is only recently that manufacture of PHEs has started in India. The problem is the non-availability and high capital investments required for installing the heavy duty presses for PHEs. SSHEs need a true, finely polished internal surface, for its efficient functioning. This calls for specially honed SS tubes for the body and special welding and annealing techniques to prevent distortions during welding. As a result of this, no firm is manufacturing SSHEs. If SSHEs are to be used in aseptic applications, the rotary seals will have to be of a special type and is a challenge to indigenous manufacture and requires a synergy of R&D with the fabricators.

**e. Aseptic processing and packaging equipment :**

Export of processed fruits and vegetables is a major industrial enterprise in India. Most of the products are still packed in sanitary cans, for which India has to depend on imports. Aseptic processing and packing of liquid foods in flexible pouches is a development that will be very useful to Indian exporters. The technology needs heat exchangers and aseptic filling equipment, which should meet

rigid sanitary standards. There is an immediate need for the industry to go into the development of these systems for lower volumes of handling per day at a much lesser and affordable cost.

**f. Special types of forming and cooking machinery :**

A number of traditional Indian foods have scope for mass production at industrial level. They need special types of forming and cooking equipment. Forming extruders, extrusion cookers and coextruders, which are available in the western market, with suitable modifications can meet our requirement. This is another area where developments are needed for interfacing traditional food processing with the modern food engineering concepts.

**g. Equipment based on emerging techniques like supercritical fluid extraction, cryogenics and membrane processing :**

India being a major country in the export of spice products and marine products, the industry should look for technologies, which can lead to product quality excellence. The techniques of supercritical fluid extraction (SCFE), membrane processes and cryogenics offer tremendous opportunities for product quality improvement. Efficient systems based on these techniques must be made available to the industry, if the export of Indian processed foods has to grow.

**h. Latest types of freezing and freeze drying equipment:**

These are two areas where very little developments have taken place. Given the tropical weather of the country and the highly perishable nature of foods, specially the tropical fruits, the need for such equipments is felt more often. Indian engineering industry must go into the development of these systems, including special types of highly efficient refrigeration compressors and controls, which are the fascinating areas for the Food Engineers.

It is here that in CFTRI we have developed an automatic dosa (Indian pancake) machine which can turnout nearly 400 dosas per hour. High level scientific inputs with technological innovation is the backdrop for success of such equipment design and production.

**i. Systems design :**

Apart from the basic designs for plant and machinery, there is need for R&D inputs in the areas of materials of construction, manufacturing processes and instrumentation, in order to produce energy efficient machines of high sanitary standards.

CFTRI has been endeavouring to develop food-processing machinery since its inception, specially to cater to the needs of the small-scale processors. Over years, several equipment designs have been worked out and



perfected through proto-type fabrication and factory trials. These designs, along with detailed fabrication drawings are passed on to the fabricators. The services rendered by the Institute to the licensees include providing design parameters, fabrication drawings and operation manuals, including assistance during fabrication if necessary.

#### **4. Human Resource Development for Food Industries: Need for activity strengthening :**

It is now well recognized that Food Technology has a special role in India's economy to accelerate the pace of social and economic development for overcoming poverty, besides increasing and improving food supplies qualitatively and quantitatively. It is imperative that agriculture contributes the main development resource for industrialization to bring about a purposeful socio-economic transformation. Post-harvest agro-food system can be the most vital instrument in this context. Strengthening of Post-harvest agro-food system will enable us to achieve :

(a) transformation of subsistence agricultural economics into a more balanced and productive mixed agriculture and industrial economics and render agriculture as a producer of value added raw materials for industrial utilization. Conversion of agricultural produce into precisely determined secondary and

tertiary products with proper marketing of the same will bring better returns to the farmers, which are due to them from the society.

- (b) generation of more gainful employment for maximizing productivity not only in agriculture but also in technologically sound and well managed agro-food industry thereby eliminating poverty especially in rural areas.
- (c) prevention of food losses in post-harvest stages which amounts to 20-30% in case of perishable foods. Cost of inputs in agricultural production and demand on land for production can be substantially cut down if post-harvest losses of foods are minimized by application of modern food technology.
- (d) employment generation in rural areas to prevent the undesirable exodus of people to urban centers. Prevention of indiscriminate migration will prevent malnutrition diseases, environmental pollution and housing problems.
- (e) improvement in India's balance of trade through greater revenue in export trade of processed agro-food products instead of raw materials with 50-500% value added.
- (f) conservation of agricultural produce for facilitating availability of seasonal foods throughout the year at reasonable price.

Having accepted the fact that agro-food system can be an instrument of change in the socio-economic conditions, it is important to examine this system in the context of the changed world order. Overcoming the barriers of world trade has certain ramifications, with regard to global competition in respect of quality and cost effectiveness. Indian food industry has tremendous opportunity and challenges to exploit the emerging world's consumer markets for fresh agricultural products provided quality and cost are competitive. Quality in the case of foods is of special significance because food preferences are sensitive which also directly affect human health and safety. It therefore calls for sound technology and adequately trained personnel in handling food right from raw material through processing, packaging and transport to the consumption point. Presence of environmental contaminants in the products such as metals, pesticides and mycotoxins can be controlled only by modern scientific and technical practices. If this is not done, the product will fail to stand the test of present stringent international quality specifications. Safety of food, nutrient content, sensory quality and packaging are all determinants of salability of the product. The commodity that is handled in a food industry is a biological material and is subject to biological variations. The type of raw material received in the factory and its cost should be constantly monitored with appropriate



knowledge and management technique. A properly trained personnel can use his ingenuity in suitably modifying the processing condition to take care of this biological variation in raw material quality so that a product of consistent quality is assured to the buyer. Catering to the needs of newer and emerging markets for manufactured foods, food ingredients and fulfilling the export commitments will call for innovations. Traditional food technologists have practiced food technology by and large in an empirical manner and the industry can ill afford to put inputs on an empirical basis. Modern food technology imbibes the principles and advancements of all branches of natural sciences including frontier areas of natural sciences. Therefore a trained personnel is equipped with capabilities to practice food technology in a rational manner and make innovations in the industry. Solid scientific foundation is the secret of any successful process or product.

CFTRI, Mysore has been regularly conducting various training programmes in the field of Food science and Technology which include a two years Master's degree programme in Food Technology, a one year certificate course in Milling Technology and various short term courses of one to three weeks duration for the retraining of the personnel from food and allied industries. So far, 800 Master's degree students, 325 Milling

Technology students and about 5400 short-term course trainees have been trained at CFTRI. Also the graduate programme leading to Ph.D., has a number exceeding hundred in any year and so far nearly 600 Ph.D., students have completed their doctoral programmes. Also the United Nations University has a Postdoctoral and Pre-doctoral training programmes tenable at CFTRI for developing countries. If we look at the requirement of the trained personnel in the food industries, the magnitude of training presently in vogue is grossly inadequate when the projected growth rate of food industry is taken into consideration. The need for manpower in the processed food industries is projected based on the value addition for different agricultural processed commodities. The training modules offered at CFTRI can not meet the present gap, unless it is strengthened appropriately to meet the ever-increasing demand.

### **5 The issue of Intellectual Property and Patenting:**

There are many factors that guide our systems in the post WTO era. Some of these being resource based socio-economic merits, internal and external markets, fiscal trade and economic policies, the human resources, the investment by sector-wise and also individual product-wise. All these amount to the new path way that we need to have for ourselves in critically putting the concept of

innovating the innovation by continuous sharpening of technology to solve problems in India and of India. There are many ways in which one can assess it through locating and positioning, once he understand as to how strategically we are placed. This requires involvement of strong policy makers, macro visionaries and deep thinkers to assess as to what kind of strategies we have to play to save our farmer from being over extracted in terms of labour and no value addition to raw material and at the same time ensuring that the production Vs productivity balance is altered favouring the farmer.

The Intellectual Property and Patenting have always been thought many-a-times as not for the small scale industries and entrepreneurs, unless they make a very big innovation (Big Bang Theory !). Most consider that what has been innovated is not worth patenting, but the fact may be exactly the opposite of it. These small innovations of one's work actually paves the way for that bigger technology and hence, one should protect the intellectual property. Therefore, in a world of high competition, the intellectual prowess and innovation to the process of technology development need to be protected at all levels including the small and medium scale industries. As a matter of fact, that is where the push and pull strategy has to be. This is so important for manufacturing technologies that one can



constantly be looking for innovation through knowledge.

In this context, we are very proud to say that CSIR has the largest number of patents in the Indian context as an R&D organization and this is simply due to the awareness and also the innovativeness, which one wants to protect it, ultimately for use by society. But this is still not enough. It has to grow in leaps and bounds. The use of a technology has a lot of collateral issues and one such virtual collateral document could be the patent itself. In other words, the small and medium enterprises (SMEs) should be fully aware of the reading, writing and interpretation of patents. At the same time, they have to be also geared on to recognize that something needs to be patented. This is especially true for SMEs, who can make the difference for wealth creation for the country through their intellectual prowess.

When we talk about intellectual property, we need to shift our gears from fighting patents to filing and fighting. There are misconceptions about patents many a times. Innovator gets recognition from society by filing a patent, but it is the choice of the innovator to ensure how it reaches society? If there is a business in it, he can charge for it. He can also use it for a social cause by donating the patents to the society. It is all up to him and this will also save the intellectual capacity of the country. If this is not taken care, somebody

else will use this in the so called WTO regime and we will be deprived of that benefit which we strongly own.

India won Basmati patent (especially claims 15,16, 17 and also 4) through the efforts of hundreds of people working towards winning this with a " Team India spirit ". How many people know this? But the media has to really look into this aspect and cover it in the massive way to give that helping hand to the people who care for such massive winning rights on a fundamental angle. I guess, it is here that we should really look at into newer alliances and newer partnership in shaping a new India. What one can call unrelated partnerships! It is also important to focus on training and retraining. I guess many get struck with the degree knowledge and training which many times are good only for about 5 years. If we do not train ourselves, we will be left behind. Hence emphasis is required in various sectors for training and retraining. I guess we have to give special attention to this if we want tomorrow's India which is quite different from what we have today.

#### **6. Biotechnological approach for present and future:**

With biotechnological intervention today, we have genetically improved high yielding varieties of paddy with improved cooking characteristics and better acceptability of the rice grains.

This requires a very important step of sheller-huller to open the paddy to give unbroken rice in its fullest form, which the consumer demands. But, by doing so, one cannot keep the rice for more than a week as the bran layer on the rice contains lipase which starts acting as soon as the paddy husk is removed. Do we have a biotechnological approach to have a rice plant without lipase? Will such a plant survive vagaries of various parameters in the field trials?

If one looks at the basic work on lipase in CFTRI, one can see the quantum of information on how difficult it is to inactivate lipase in vivo and in vitro. Hence, the rice is polished, to keep the rice grains for longer duration, whether for public distribution or for extension of shelf life for further value addition. The rice bran that is removed from rice contains proteins, waxes, oil, crude fibre, tocopherol, tocotrienol, lecithin, gums and oryzanol (a wonderful antioxidant and an anticarcinogen). An integrated approach can make that rice bran which is shed by the rice industry as a wonderful by-product with a biotechnological approach.

#### **7. Technology Management and Synergy Establishment**

The technology management strategy by entrepreneur is to rightly manage the product innovation matrix and the consumer sensory perception which are the deciding factors in food industry.



Radical innovation needs encouragement, long term investment in R&D and the information about current ongoing technologies vis-a-vis positioning.

Industrial sickness in many cases across the globe can be attributed to failure of one of the above inputs and invariably the most maligned one is entrepreneurship, probably due to the fact that scientists and technologists involved in creation of the technology have no role in adjudicating the cause of success/failure of an entrepreneur. Often, the technology input is being made a scapegoat for the failure, on account of other factors. However, today one needs to work together and make entrepreneurship a real success in this giant industry and in this part of the world. Hence today's concept has to be the working together with alliances and intellectual partnership. There should be no second thought about it.

## **8 The role of Indian Food Processing Industry in the Post WTO era :**

When we look at the agri business in India, we have the producer who is the most important person and the material passes through the commission agent, the trader, the wholesaler and ultimately the retailer to the consumer. During this process, there is a lot of value addition to the material especially by small scale industry. In India, it is also

a fact that nearly 95% of the exports are from small scale industries, 80% of employment is in small scale industries and 40% of productivity is from small scale industries for an overall point of view and not just in food processing alone.

Let us examine as to what are the inherent strengths of the Indian small scale industries. The first thing that comes to our notice is the vast amount of employment generation, which is followed by industrial growth in clusters, sustainable regional development, local sustainability with a futuristic opportunity for micro entrepreneurship development (unique to India in terms of opportunities) and ultimately both the National and International marketability. In addition, these roles are endowed with low cost of product and flexible manufacturing systems. The value addition to agri produce is needed for India. The question is are we capitalizing it fully? I guess the answer is very obvious.

It is also important for us to assess as to what are the major reasons that are responsible for shutting down the large number of small scale industries? The list can be large. But, I guess, some of the major points would be the non-availability of proper technologies in time to the small scale industries. Also, the synergy with large scale manufacturers after hearing the blame from the large scale manufacturers is missing as

the large scale manufacturers often mention that the local industries are not up to the expectations. I guess these large scale industries have a critical role to play in the social set up and it should be a total package from regional systems in supporting role each of these industries. Yet another limitation is in securing financial contributions and the apathy of the financial institutions and their trend to give only minimal loan to small scale industries (barring software industries). Will software solve the entire gamut of social problems? I guess India has to be proud of our leadership in software industries, but at the same time, we have to look for a tomorrow's holistic approach in the development. It is this power of India from a holistic approach that may save us from tomorrow's vacuum. The other problems which are very evident are policies of taxation, the regulatory laws, industry's apathy for R & D institutions and also the thinking that we can always buy latest from abroad. These are some of the problems which many industries have to overcome. I guess it is here that there is a strategic role that some of us have to play in terms of the industries survival especially the small scale industries in the country.

## **9. Sustainable consumption:**

One area that comes to my mind at this point of time is the concept of sustainable consumption which is so important to India and India has the power if we can use



it rightly. I do not think that anybody has put a sanction on us to properly utilize the sustainable consumption pattern. I am sure, these are shackles put around our necks by ourselves and I believe we can really be different from many angles in which we can look at sustainable consumption especially in agri resources or managing the production chain towards sustainability, meeting the needs of the green consumer, leap flogging in technologies, in addition to those that have to benefit from it by clear mandate and commitment and dedication from farm to consumer. We must have a paradigm shift from selling "raw material" to gearing up to sell "value added products" through added services and at the same time to use Indian indigenous knowledge and skills including traditional skills and traditional practices, of course with a proper protection and consolidation of the intellectual property.

#### **10. The Market:**

The market is an important area which we have to address. The consumer plays a very important role in the market. The perception of consumer from the point of view of Government, non-governmental organizations, media and advertising agencies and small, medium and large scale industries and even from the point of view of both international markets and national markets has to be kept in mind. In the case of companies only which recognizes and meets the consumer demand then it can

survive. The NGO's will have a large role to play about the issues, for example, nutrition, strategy of agri-production etc.; on the other hand, the government can legislate, regulate, offer information dissipation from various areas and also try to stimulate innovation all around by encouraging cleaner societies. Training at the micro management and at different levels, would be in the long run advantageous to society. For example, the micro management at the rural level needs critical improvement and specific charter to act in a definite path way using Panchayats is very vital. It is only then we can look for a different India. Another area is education. It is a question as how much we are transferring the values through education? Are we bringing about patriotism, are we bringing about exploring newer knowledge? Total radical change is demanded and if we want a different India tomorrow, today itself we have to improve.

#### **11. The WTO negotiations and the future of India's food processing:**

India is the second largest food producer in the world, but we know that being second just does not mean largest productivity per acre. I guess, it is here that we need to consolidate all our agricultural research which needs to be adaptable to Indian conditions wherein it has to be looked from a holistic angle with less chemicals more of eco friendly systems and holistic approach of even re-innovating what we have of old

concepts of alternate pulse cropping and the concept of nitrogen fixing and I am glad today we are in such loud thinking. Thanks to ICAR for that marvelous job which has turned around the country. When we claim some times words such as organic farming, we have to ensure it by way of soil being organic, the pattern of cropping is organic as well as methodologies of process strategy and transportation (not to be exposed to chemicals) in the environment and even the storage by the consumer has to be organic! This requires tremendous amount of awareness and I am afraid that awareness cannot penetrate deep in society unless this reaches through education, culture and the role of media in enhancing such an important area as this which India can proud of. Recently the European community rejected the GM Soybean from US but they looked forward for non-GM Soybean from India and India has to learn a lesson from it that we have certain advantages which other countries does not have. Let us cash upon it by ensuring clearly that this benefit of our resources can be a dominating factor in international market provided we have a clear policy within ourselves and to cope-up ways in terms of trying to bring innovative agricultural system with a clear management issues to help the farmer and the grower on the one hand and get the benefit of the price to encourage him as an entrepreneur.

There are several challenges, opportunities and strategies in the



WTO sector. Just to mention a few domestic and export subsidies continue in developed countries even today. One may not be able to avoid it. Nearly 20% of domestic support and 36% export subsidies will be removed by the west but on the other hand we are bringing ahead to reduce it totally. Is it fair? Have we asked sharper reduction in these subsidies in the millennium round of WTO negotiations? How do we attend these meetings with strategy built into it for a win-win situation? If we look at article 3.3 of SPS, it allows safety norms higher than international standards. For example, in the area of food to those undermining international standards and harmonization. Are we registering this clause to fight? Certainly we do not even talk about it. I guess we should. The SPS and TBT have technical assistance for quality improvement, no time bound and specific commitments are made in clauses 9 and 11. We should ask that specific commitments in the final millennium round through trips of agreements, projects and intellectual property. Geographical appellation in which all patenting and trade marking which is essential to core business and successful challenging patents in other country or third country is very vital. We do not even plan well but wait till somebody patents it and then fight. Therefore, through these systems of operation, we need to address in the WTO millennium round in terms of clarification and tariff reduction in separate systems both

internationally and nationally in many areas and at the same time to look into encouragement and scope for negotiations to be built in as we reach the finer moments of negotiations. We also have to address the food laws and harmonization as adoptable to India probably with a negative list and a more positive approach and make it consumer safe and manufacturer friendly and self regulatory as much as possible. It is here may be the national laboratories and academia and the industries should shake hands and say that we shall work for the country as one in the team spirit irrespective of who gets benefit. I guess ultimately the benefit is to the customer and the consumer and we have to remember the final benefits should reach the farmer, agri business entrepreneur and innovator concerned. India has got the power and I guess before anybody worries about us, let us worry about ourselves and take this country into higher levels of productivity and production thus generating more jobs and helping poor infact to increase his buying capacity with a holistic approach for overall economic development. It is only then the development of rural India can happen and we have a different model which I may term it "Model India" which others will emulate. Let us also not forget that we have a strong culture and we have a very strong history and we cannot ignore all of them and just look at the future with a few gadgets to take us into a new world. I am afraid, it is always the people who make the difference

and these people have always made the difference for the country as one with rich history. But let us merge power of the people, power of the knowledge and the future can be wonderful. We are no way inferior and I guess that confidence is the one that has made me to write this article in a fit of passion.

### The Epilogue

Thus India's food processing industry has been declared, under a favourable government policy, to be one of the high-priority areas under the new industrial system and also the budget flavor is in the right direction. With this background, and with an attractive market potential in the country, a need exists to focus on the primordial area and a major industry underpinning food engineering for innovation, and on the modernization of food processing industry. It should also be remembered that societal change leading to increased consumption of processed food is one of the primary driving forces in the country and the area of food processing has the potential with figures of production reaching close to nearly 800 million tones of Food before 2005 for India. Thus, India can be the leader in Food processing area provided it can value-add and combine the modern science with that of traditional knowledge and technology, in addition to minimizing the wastage and achieving the extension of shelf-life. We can achieve it provided we plan strategically for it and perhaps this article may contribute to that thinking process.



# INTEGRATED POST PRODUCTION MANAGEMENT AND FOOD PROCESSING - THE NATIONAL OBJECTIVE\*

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Food is provided in abundance in nature for every living being. Sustainability of the bounties of nature depends on the capability to utilise resources judiciously for gainful purposes. In the good old days food was available in plenty but a phenomenal increase in population in modern times has resulted in food scarcity. Adoption of appropriate post harvest management and food processing can provide adequate food. Unfortunately this has been realised very late. Attention to the concept of post harvest food loss reduction as a significant means to increase food availability was drawn by the World Food Conference held in Rome in 1974. The seventh session of the U.N. General Assembly in 1975 passed a resolution calling for a 50 per cent reduction of post harvest losses by 1985. Food loss prevention became a priority area with the FAO and an Action Programme of FAO at first focused mainly on durable food grains, because of their prominence in our daily diet. Only in May 1980, an Expert Consultation On Food Loss Prevention in Perishable Crops, mainly covering fruit and vegetables was held in Rome. India is one of

the horticulture rich countries of the world but unfortunately, unlike other horticulture rich countries, average Indians do not get the basic daily requirement of fruits and vegetables and our Human Development Index (HDI) is very low. A considerable amount of the fruits and vegetables produced in India is lost due to improper post harvest operations and lack of processing of food; as a result there is a considerable gap between gross production and net availability. To achieve our target of a hunger free India, only increasing the production and productivity will not be enough. A lot more emphasis needs to be given to post harvest management and food processing sector. Post harvest loss reduction is essential to make available more food from the existing level of production. The success of production lies in the proper distribution of the produce and its subsequent utilisation by the consumer, and in the process nothing should go waste i.e. 100% utilisation of the production in one form or the other should be the motto. This paper discusses how integrated post harvest management of fruits and vegetables can provide

adequate food and fulfil some of the national objectives.

## Present Status

India produces over 200 million tonnes of food grains and about 132 million tonnes of fruits and vegetables. Due to the perishable nature of fruits and vegetables the post harvest loss of these commodities is four to five times higher than in food grains. The wastage cost of fruits and vegetables is estimated to be Rs.23,000 crores each year. In our country fruits and vegetables are generally marketed immediately after harvest and hardly 2% of the production goes for commercial processing, whereas this figure is more than 50% in developed countries. Due to improper post harvest management and lack of adequate processing facilities a huge quantity of highly nutritive fruits and vegetables are lost in our country. In India it is often found that there is glut of a particular horticultural commodity in one part of the country when it is scarce in the other parts. Prices of seasonal fruits and vegetables fluctuate greatly and during the period of maximum availability the prices are

\* Paper presented at the 56th Annual Conference of AIFPA and National Seminar on "Food Processing & National Objectives - challenges in the new Trade Order" held on 21 Dec. 2000 at New Delhi



unremunerative to the farmer. At other times, these commodities are so highly priced that the ordinary consumer finds it beyond his purchasing power. It is unfortunate that unscrupulous traders and middlemen involved in this trade do not cooperate in this matter. On the contrary they create artificial glut or scarcity.

### Scope

The unnecessary wastage of valuable commodities can be checked if they are processed into value added products or adequately distributed in different parts of the country. There is a great scope of both domestic and export trade in our country by improving the post harvest distribution and processing facility of these highly perishable horticultural commodities. If the fresh and processed fruits and vegetables are evenly marketed from the places of abundance to the place of scarcity, not only will the consumers get the produce at a reasonable price but also the producer will not be forced to sell at throw away prices. Some of the techniques are elaborated which are generally not followed in our country and that can be of some practical use to achieve our national objectives.

### Primary Processing:

Unlike durable crops like cereals, pulses and oilseeds perishable fresh fruits and vegetables in our country are marketed immediately after harvesting without primary processing. Horticultural produce in general and fruits and vegetables in

particular generate a large amount of valuable waste that end up as garbage. However, if they are gainfully utilised at the proper time they can become value added products. Vegetables such as cauliflower, peas, leafy vegetables, etc. can be primarily processed immediately after harvesting or at packing stations so that inedible parts are removed before the vegetables are sent to the metro city markets in unit packs. It has been observed that 10 to 60% of the fresh fruit and vegetables marketed and purchased by the consumers in India is rejected as inedible. In villages or small towns these inedible parts are utilised by giving them to the domestic animals as a feed ingredient while they are thrown away as garbage by consumers in the metro cities. A case in point is the millions of tonnes of waste produced from cauliflower and green peas. The inedible parts of both these vegetables can be gainfully utilised to feed starving cattle but is instead thrown away as garbage.

### Packing Station:

In our country, there is absolute lack of the concept of establishing packing stations. Most of the fresh horticultural produces are packed right in the field without any pretreatment and some of them are even transported without packaging. In the developed countries most of the fruits, vegetables and flowers after harvest are placed in bulk containers and transported to packing stations. There they are washed, sorted, graded and different other treatments are given

viz. fungicidal dip, surface coating etc. The commodities are then packed in cartons or crates, pre-cooled and are either placed temporarily in cool storage for subsequent loading or loaded directly into transport vehicles, preferably refrigerated, and transported to market. In India due to lack of packing station facilities a lot of inedible parts of the produce are transported. If these inedible parts are removed at the packing station then not only will the transportation cost be reduced but also this large amount of bio-mass that is wasted and adds to the pollution may be utilised gainfully. Therefore, farmers cooperatives and other agencies should be encouraged to establish packing stations at nodal points to augment the marketing of horticultural produce both for internal trade and export.

### On Farm Storage:

On farm storage is one of the important infrastructure facilities required in the remote and inaccessible areas to reduce the losses of highly perishable fresh horticultural produce. In a tropical country like India maintenance of low temperature is a great problem. Mechanical refrigeration is energy-intensive, expensive, and difficult to install and run in remote areas. Considering acute energy crisis and non-availability of sufficient cold storage facility, efforts were made to develop low-cost-low energy, environment friendly cool chambers from locally available materials utilising principles of evaporative cooling. These cool chambers from



locally available materials utilizing principles of evaporative cooling. These cool chambers maintain 10-15° C lower temperature compared to field temperature, depending on the season—and also maintains around 90% relative humidity. The fruits and vegetables are stored in plastic creates in the chamber. The shelf life of the fruit and vegetables in the cool chamber increased from 3 to 90 days as compared to storage at room temperature.

### **Packaging:**

Packaging forms an integral part of marketing of fresh horticultural produce. It provides the essential link between the producers and the consumers. Wood on account of its favorable properties has remained the main packaging material for fruits and vegetables. However, to maintain ecological balance the need to conserve timber has assumed critical importance. In the conservation of forests, therefore, there is urgency to identify unwanted and substitutable usage of timber. Packaging has been identified to be one of the most important areas where such substitution is not only possible but also obviously desirable. Very serious and strenuous efforts are needed to cope with the situation. Considerable work has been done by different agencies on the introduction of alternative packaging. It has been established that corrugated fiber board (CFB) containers consume one third of the wood required for timber boxes of the same size. The CFB boxes can also be fabricated from Kraft

paper made from bamboo, long grasses and many other types of agricultural residues like bagasse, paddy, cotton stalk, jute stick and wheat straw and recycled paper and cardboard. On account of severe shortages of fuel wood, timber box to a large extent become firewood while all the CFB cartoons are recycled as pulp or paper. The immediate answer lies in switching over from timber to CFB boxes for the packaging of horticultural produce. More corrugated cartons can be used in local distribution, if the box structure is made more favorable. The ventilated corrugated fibre-board (CFB) box with ventilated partition developed at IARI was found to be ideal for packaging and transporting. Bruising of fruits is found to be maximum in the wooden crates with straw and paper and minimum in the fruits and vegetables in the fruits packed in CFB box with partition the cushioning materials used for packaging in wooden boxes are dry grass, paddy straw, leaves, sawdust, paper shreds etc. All these materials end up as garbage and add to environmental pollution in cities. On the other hand CFB boxes use either moulded trays or cardboard partitions which can be easily recycled.

### **Palletisation :**

Loading and unloading are very important steps in the post harvest handling of fruits and vegetables but are often neglected. One of the problems in our country is the non introduction of pallets in the trading of fruits and vegetables. Post harvest loss can also be reduced

considerably by using pallets. All the subsequent handling operations become very easy once the boxes are placed on the pallets. With the introduction of CFB (corrugated fibre-board) boxes India should consider seriously the introduction of pallets. This should be backed by sufficient research data for standardizing techniques for individual commodities. It is also essential to introduce mechanical loading and unloading particularly with the use of fork-lift trucks while handling pallets.

### **Containerisation:**

Though containers have been introduced recently in our country in a big way, these are not at present used for carrying fresh horticultural produce for internal distribution. In the advanced countries, refrigerated containers as well as Controlled/ Modified Atmosphere containers are available for shipment of fruits, vegetables and flowers. In addition to the introduction of refrigerated containers in India, low cost containers can be designed and fabricated suitable to our requirement by introducing ventilation and evaporative cooling. One of the greatest advantages of the container is that it can be placed on truck or rail. Palletisation and containerisation will go a long way in establishing both internal and international trade of horticultural produce on a firm footing.

### **Cold/Cool Chain:**

One of the important reasons for advancement in the field of



post harvest technology of horticultural produce in developed countries is the adoption of cold chain. The maintenance of low temperature in different stages of handling by means of a cold chain results in reduction of losses and retention of quality of horticultural produce. It may not be possible to introduce the cold chain facility in our country like in developed countries immediately owing to several difficulties such as high cost, lack of abundant uninterrupted power supply etc. Therefore, it is suggested that in place of mechanical refrigeration we should try some other alternative cooling system. In this respect the advantages of evaporative cooling can be established in our country. This system will at least reduce the post harvest deterioration and retain the quality of the horticultural produce much better than the existing conditions.

### **Investment in food processing:**

India provides great opportunities for investment and growth in agro-processing sector. A massive thrust to food processing and other agro-based industries will add value to the product thereby increasing the income of farmers, create employment opportunities, diversify the rural economy and foster rural industrialisation. This sector is recognized as having an important role in improving agricultural productivity, reducing wastage of fruits and vegetables, providing better nutrition and improving food availability for the domestic market. The demand for processed food in Indian is likely

to multiply significantly in the coming years. Rapid urbanisation, breakdown of joint family system, increase in the cost of household labour, increasing number of working women, rise in per capita income etc. have all contributed to the rapid growth and change in demand patterns. India is also one of the biggest emerging markets with a population of over one billion and with a strong middle class of over 250 million. Food processing can add value and find good business opportunities in India.

### **Indigenous fruit processing:**

India has a wide range of indigenous tropical fruits that are underutilised. Most of these fruits can grow even under adverse agroclimatic conditions. A large number of these fruits are known for their therapeutic/medicinal and nutritive value and have excellent flavor and very attractive colour. Consumers today are becoming increasingly conscious of the health and nutritional aspects of their food. The tendency is to avoid chemicals and synthetic foods and choose therapy and nutrition through natural resources. The indigenous fruits of India have an important role to play in satisfying the demand for nutritious, delicately flavored and attractive natural foods of high therapeutic value. Some of these fruits are not easy to eat out of hand e.g. bael fruit that has a hard shell, mucilaginous texture and numerous seeds; as a result it is not popular as a dessert fruit. Kokum is not acceptable as a fresh fruit because

of its high acidity. Similarly fresh aonla is not very acceptable because of its strong astringent taste. It is urged that indigenous/underutilized fruits which are not easily marketed in the fresh form should be processed into acceptable products so that the growers get a remunerative price and consumers all over the world get the opportunity to enjoy the fruit in the form of its processed products. Though some fruit products, are being manufactured at present on a small scale, inspite of such favorable possibilities no systematic approach has been made to utilize the potential of the indigenous fruits on a large scale mainly because of the lack of the requisite amount of the raw material. Organised orchard and systematic collection of the raw material are of utmost importance. It is urged that instead of trying to compete in a market where other countries are already established and are far ahead we must break a new ground and create markets for the indigenous fruits where no other country can compete with us.

### **Processing of unmarketable fruit and vegetable and factory waste:**

A large amount of unmarketable as well as physically damaged fruit and vegetables that are without infection but would be spoiled on storage can be made into durable and value added products. In addition huge quantity of waste generated by fruit and vegetable processing factory could be utilized gainfully; otherwise they would be converted into garbage creating environmental pollution.



## Human Resources:

Human resource development is the most important issue for the proper growth and development of any discipline. Progress and prosperity of the subject, purpose, objective or mission entirely depends on the capability of the human resource involved in the matter. One must realize that the success of production lies in its proper distribution, processing and subsequent utilisation by the consumer, and in the process nothing should go waste. In our country we have an acute shortage of manpower in this specialised field. Post harvest technology is

multi-disciplinary in nature. It involves various disciplines like microbiology, physiology, biochemistry, food science, engineering, economics etc. It cannot be a monopoly of any one subject; the success of post-production technology depends on its multi disciplinary approach.

## Conclusions:

It is obvious from the above discussion that there are many a loop-hole in the entire system of post harvest handling and processing of the food crops in our country. If timely action is not taken to improve the system then obviously the post harvest loss will

progressively increase with the increase in the production. In a civilized world, when millions go hungry and a large section remains below the poverty line it would be a crime to allow the post harvest loss to continue. It is unfortunate that in our country the policy makers and planners set up a target for highest production without making any effort simultaneously to set a target of reduction of post harvest losses, which otherwise will be more economically viable. We must also develop public awareness and set fixed target to curb the post harvest losses on the same lines as any other time bound national programme.

## PLACEMENT SOUGHT

1. A brilliant young experienced person having B. Tech (Agri Engg.) Degree from College of Agricultural Engineering, Jabalpur and M.Sc (Food Technology) from CFTRI, Mysore seeks suitable placement. He has eight years experience of working in different Food Industries.

He may be contacted at : Mr Anil Somani, BQ-122, Shalimar Bagh, New Delhi - 110 088



2. An young lady with B.A. Sc. (Food Technology) degree from College of Applied Science for Women, Delhi University and M. Tech. (Food Biotech Engg.), College of Technology, G.B. Pant University of Agril. & Technology seeks suitable employment in Food Industry. She may be contacted at : Ms. Secma Pandey, C-40, Chandra Nagar, Ghaziabad - 201 011 (U.P.) Tel : - 0120-4628254



3. Nineteen students have passed out in 2001 from the Rajguru College of Applied Sciences for Women, University of Delhi with a Bachelor's Degree in Food Technology, They have also undergone summer training in various Food Industries.

For requirement of qualified personnel for the Food Industry, the Principal of the College can be contacted at : Dr. S. Lakshmi Devi, Principal, Rajguru College of Applied Sciences for Women (University of Delhi) Jhilmil Colony, Vivek Vihar, New Delhi - 110 095, Tel: 2146024/2168361, Fax : 2142517, E-mail : caswdel@sansad.nic.in, Website : www.rajguru.com





*Special Articles*

## SUPPLY CHAIN MANAGEMENT - ROLE OF CONTRACT FARMING\*

Abhiram Seth  
Executive Director - Exports  
Pepsico India Holdings Ltd.  
Gurgaon - 122 002 (Haryana), India

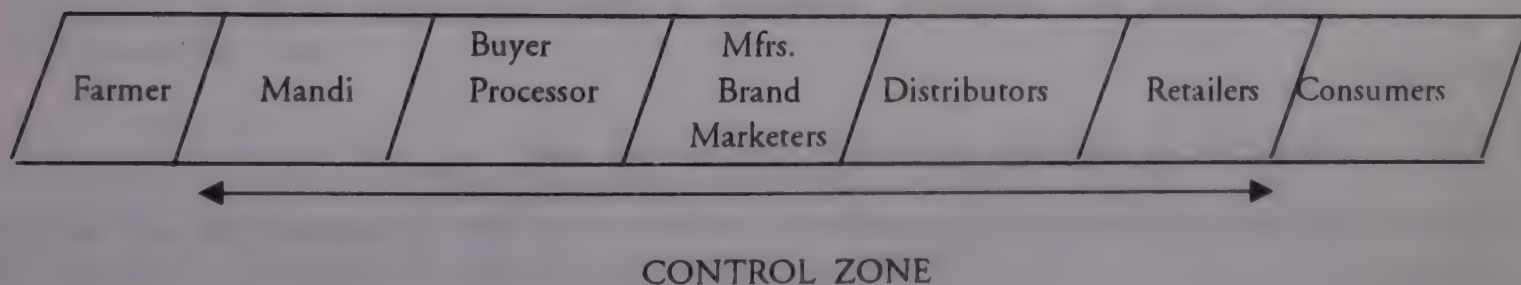
The Speaker, Mr Abhiram Seth made a slide presentation of his talk. The sequence of the slides is given below.

### How are Market Expectations Changing the supply chain ?

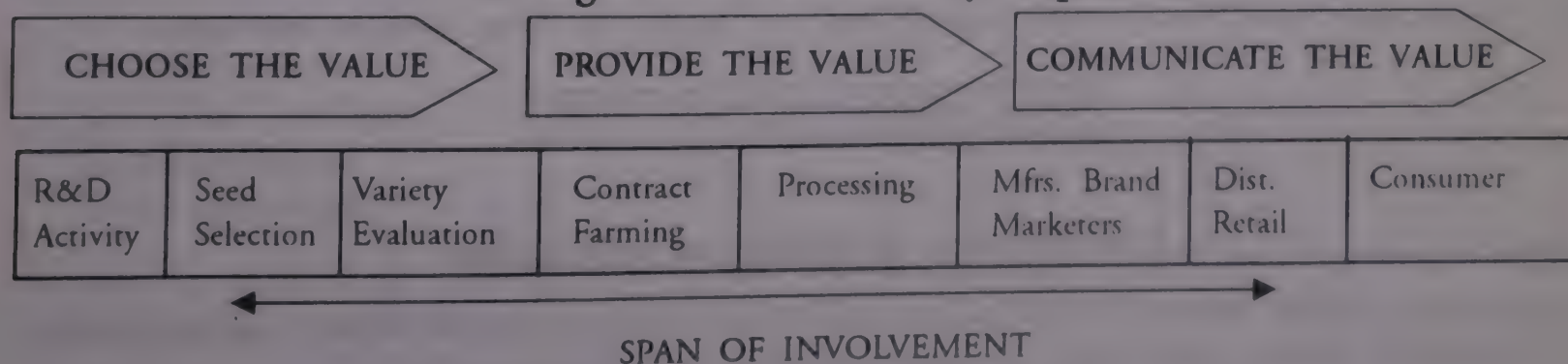
- Setting target costs for suppliers instead of asking for prices.
- Partnering the vendors in designing the product and specifications. Working jointly in lowering the production costs.
- Suppliers have to confirm to J-I-T and learn manufacturing systems - leveraging the forecasting too.
- Costs of inefficiency and poor quality products have to be borne by the suppliers.

### Looking at the supply chain-

#### THE TRADITIONAL MODEL



### Moving to a value delivery sequence



\* Paper presented at the National Seminar on "Food processing & National Objectives - Challenges in the New Trade Order" organised on the occasion of the 56th Annual Conference of AIFPA.



## The new supplier buyer relationship structure

- Developing relationships, moving away from deals.
- Neither Buyer nor Vendor will take each other for granted.
- Dynamic environment. Competition will determine, who sells to whom. Business needs will direct vendor selection.
- Focus will be on a mutually interdependent business relationship.
- Market forces, rather than binding agreements determine the constituents of the supply chain. Hence continuous need to build technological and process capabilities.

## Supplier in the new competitive environment

- A successful vendor will be one that meets the specific needs of different customer segments.
  - *One size fits all Vs. customization*
- Supply chain, to provide variety and flexibility without compromising on cost, quality or delivery.
- Ability to manoeuvre pricing levels limited, as the market decides price.
- The real opportunity is to reduce costs and become the preferred supplier.
- Therefore the advantage of owning as much of the supply chain as practical.

## The need for contract farming is clear but what is it ?

### ESSENTIALLY

The farmer is contracted to plant the contractor's crop on his land.

- Harvest and deliver to the contractor, a quantum of produce, based upon anticipated yield and contracted acreage.
- This is at a pre agreed price.
- Towards these ends, the contractor may or may not supply the farmer with selected inputs.

THIS MODEL WILL NOT WORK

## This contract is simple in articulation

In practice, it actually involves a more complex mix of the technology transfer of an integrated spectrum of horticultural services with a focus on farmer economics & competing crops

HOW DID WE PROCEED ?



## Partners in progress

- Punjab Agricultural University, Punjab Agro Industries Corporation and PepsiCo forged a partnership leveraging individual strengths.
  - PAU : Knowledge of horticulture with special focus on Punjab.
  - PAIC : Extension services and understanding of the Punjab farmer.
  - PepsiCo : International research experience, marketing and commercial skills.

## Set up the building blocks for the business

Land preparation & planting,  
Crop monitoring during growing period  
Harvesting, transportation, logistics  
Prompt farmer payment system

*Commercialisation*

The extension services team

- Selection and training

Farmer education programme

Field trials at farmer fields

- Multi-locational & crop timing

*Technology Transfer*

Evaluation of varieties and hybrids from sources in the world

Multi locational trials and short-listing-selection

Blueprint for agricultural practices after adapting to local conditions

Evaluation of farmer economics model

Demonstration farming

*R & D Activities*

## The Creation of a core R &D Team

- Core team of scientists & research specialists were assembled.
- Punjab Agriculture University, Ludhiana seconded key personnel to the project.
  - A vegetable breeder
  - A soil scientist
  - A plant pathologist
  - An agronomist
  - An entomologist
- Pepsi Co provided the fulltime services of three overseas consultants - experts on the growing of tomato and Frito-Lay expertise on potato.
- Infrastructure and facilities for R & D activities were put in place.



## **The extension services team**

- Identification and selection from "Sons of the Soil".
- In close liaison with R&D, training is imparted.
- Farmer contact commences.
- The benefits of a "partnership" approach communicated to potential growers.
- This team becomes the direct interface between the company and the farmer.
- Farmer Education Programme - technology transfer from lab to field.
- Liberal use of video show, slides, charts and technical bulletin

### **CROP MONITORING FROM NURSERY TO PROCUREMENT**

## **What was the impact ?**

- Tomato yields increased threefold, from 16 to 52 MT/hectare.
- Chilli yields increased from 6 MT to 18 MT/hectare.
- Fresh market prices for tomato dropped with increased availability. However farm incomes increased by more than 2.5 times.
- The processing season, linked to fruit availability, increased from 28 to >55 days.
- The technology spread to non Pepsi growers as well, leading to all round improvements for other crops.
- Potato varieties with low sugar and high solids introduced for processing.

## **The advantages of contract farming**

To the Farmer :

- Exposure to world class mechanized agro technology.
- Obtains an assured up-front price and market outlet for his produce.
- No requirement to grade fruit, as mandatory for fresh market sale.
- Bulk supplies versus small lots as again required by the fresh market.
- Crop monitoring on a regular basis. Technical advice, free of cost at his doorstep.
- Supplies of :
  - Healthy disease free nursery
  - Agricultural implements
  - Technical bulletins etc..
- Remunerative returns and timely payment

**IT TAKES 2 - 3 YEARS TO BUILD TRUST AND CREDIBILITY WITH FARMERS**



## The advantages of contract farming

To the Company :

- Uninterrupted and regular flow of quality raw material.
- Protection from fluctuation in market pricing.
- Long term planning made possible.
- Concept can be extended to other crops.
- Builds long term commitment.
- Dedicated supplier base.
- Generates goodwill for the Organization.

## The problems that beset contract farming

- Small size of farmer land holdings.
- Need to contract with a larger number.
- No mechanism to discourage default. No legal recourse when faced with large scale contravention of contracts.
- Lack of a crop insurance scheme to protect against natural calamities.

## A lot can be done despite the absence of a legal framework

- Maintain a proper database on farmers.
- Incentives, rewards & public recognition.
- Publicising the names of defaulters in the locality of default.
- Farmer encouraged to set own targets, assist with draft of QC standards etc.
- Clearly allocate quantities for the fresh market.
- Repeat defaulters are not considered again.
- Maintains a high motivation level.
- The social stigma usually suffices as a disincentive to default.
- Promotes "ownership" of the business, builds loyalty over the long term.
- The difference becomes apparent very quickly.

### FARMERS' COMMITMENT - A FUNCTION OF PERCEIVED ADDED VALUE

## Success factors - some imperatives

- Technology transferred to the field level must be tested and proved.
- Technology must be within the farmers' resource base - Financial - Intellectual
- Predetermined and consistently available marketing outlet.
- Corporate commercial will to succeed over an extended time frame. Ability to take the knocks and punches that come with any learning curve. Minimum 5 years of investment before any returns.
- Government support - to fortify this determination.





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# GENERAL ARTICLE

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## CHALLENGES POSED BY THE REMOVAL OF QR's ON FOOD PRODUCTS

S. Jindal

*Vice President, AIFPA*

On 1st April 2001, India entered the ultimate phase of adopting WTO, to join the league of Free Trade Nations. The process of trade policy liberalisation which started in 1991 reached the crucial milestone with the announcement of the Exim Policy 2001-02 when Quantitative Restrictions were removed from the final batch of 715 items.

Among the extensive list opened up for imports are a wide spectrum of foods such as Fresh Fruits & Vegetables, Dairy Produce, Processed Fruits and Vegetables Products, Meat Products, Poultry, Cheese, Coffee, Tea, Spices & their extracts, Wheat, Rice, Cereal Foods, Bakery & Confectionery items, etc.

While the open trade regime brings fresh air for the Indian Consumer who gets the freedom of choice, the Indian Industry has a severe challenge to meet. The flow of the imported product brings with it global competitiveness & an environment of anxiety for domestic producers. Even though we may reassure ourselves that Indian exports

will stand better prospects in the shared World Trade Order, the apprehensions are hard to go & need deeper thinking. The foreign products carry the stamp of better quality & presentation and in some instances are also lower in price. The inclination of the consumer to buy the imported products even with a slight price increase is natural. The Government has done well to maintain the import duty on most food products at 35% to regulate the influx of the foreign products to some extent.

Having taken the crucial decision to join the global league, we have to abide by the difficulties it poses and look for the opportunities it offers. What needs to be thought is - how well prepared are we to survive the change & to make the better of it? If we are not adequately prepared, then how to make it happen? The answer is not easy & appears to revolve around the following issues as far as food processing is concerned.

### A. THE FARM LEVEL

The resource base of The Indian food industry i.e. the farm produce is lacking in technology & infrastructure. The entire process of growing, harvesting, storage & transportation (similarly for Dairy, Poultry, Meat & Bakery sourcing of rawmaterial ) is technically weak & lacks facilities. The basic level of awareness & information is low & formal training is minimal.

To be really able to compete globally in food products the farm sector as a whole needs to be strengthened. This requires huge investments in technology upgradation & infrastructure, improvement in yield, quality & grading of fresh produce and an efficient post-harvest collection and storage mechanism. Unless we are able to make this happen, not much can be achieved in the global perspective. Much smaller countries with fewer natural resources have excelled in the above arrangements. We can do the same if the right inputs & policy framework are laid out.



## B. THE PROCESSING LEVEL

The processing level happens to be the most crucial link in the entire chain. It provides stability & extended shelf life to the farm produce, convenience of use to the consumer & a packaging mode for distribution. Most importantly, it opens up the scope for creativity & innovation. The Indian food processing industry in many ways needs to gear up for the above. The areas where specific input & arrangement are required are; access to international technology, simplification of industrial laws, a quality assurance system for raw materials; development of state-of-the-art packaging materials & equipment, low-cost energy and finally an unrestrictive innovation oriented food regulatory structure.

In the above sequence of thought it needs to be acknowledged that the Government has taken a bold initiative in the Union Budget 2001-02 to provide impetus to growth by exempting a major part of the food processing sector from levy of excise duty. This is a welcome step & will definitely yield good results both directly & indirectly. Ministry of Food Processing Industries and Ministry of Finance deserve to be complimented for the same.

## C. THE DISTRIBUTION LEVEL

At the post manufacturing level, we need to focus on a cost optimised distribution & retail system, free from local & inter-state taxes. Rapid & safe transportation is also essential for effective distribution. It is imperative to build up an understanding at the state Government level that a uniform national policy free from tariff and other barriers on movement and sale of food should be adopted.

## D. THE EXPORT LEVEL

On the export front we lack in systems for containerisation, haulage & quick shipment. Smooth transportation of cargo from one stage to the next, an efficient port handling arrangement & a quick documentation system need to be installed if we are really serious for a cutting edge in the export market. If we are not able to do so the very purpose of adopting WTO will be defeated.

At this juncture let us recognise that no country will ever allow its industry to suffer. It is necessary to protect the sensitive interests through a set of WTO consistent options. As an immediate measure, to keep in command of the situation, the

government has drawn a list of 300 'sensitive items' which cover food products, and shall be monitored closely by a panel headed by the Commerce Secretary in a "War Room" seriousness to check trends of excessive imports of any item. Naturally, effective anti-dumping measures will have to be taken to safeguard the domestic industry against any such adverse development.

Let us accept that the Indian industry is not prepared enough for the challenge posed by the removal of QR's & needs time to build up its competitiveness. The survival in this vulnerable period of building up, needs a thoughtful & liberalised policy frame-work. Adopting WTO is not an end to a goal but beginning in a real sense. The opportunities inherent in the free trade regime are not easy to come by. This is the starting point, the track to the finishing lines is long & tough. This calls for a well coordinated initiative by different Ministries of the Central Government, the Planning Commission, State Governments, the leading industry chambers as well as advanced centres of agricultural research & development. Naturally, the Ministry of Commerce has to take the lead & provide the nodal function to further streamline the liberalised policy frame-work.



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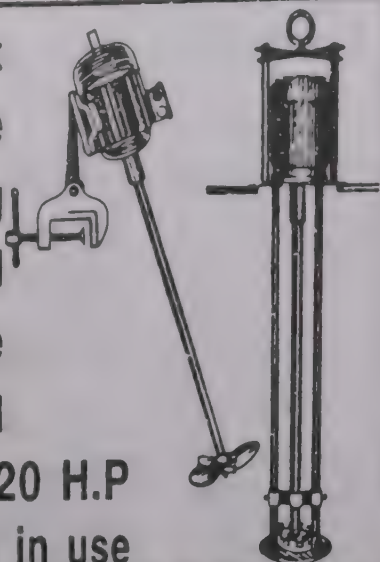
Pharmaceutical Food

Beverages Pesticide

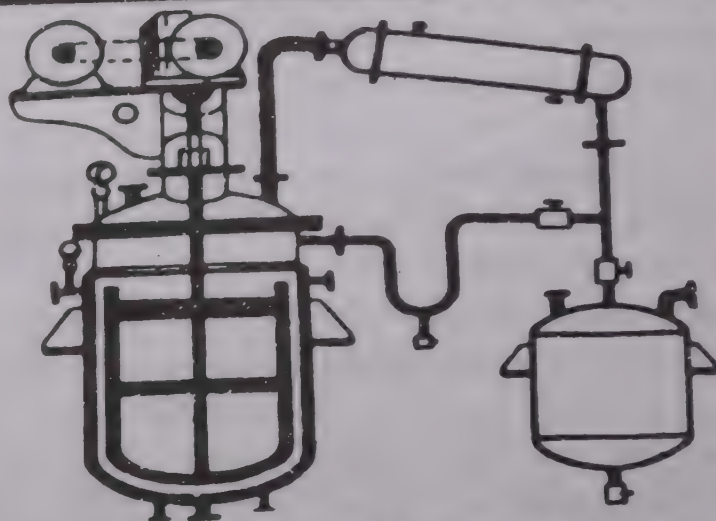
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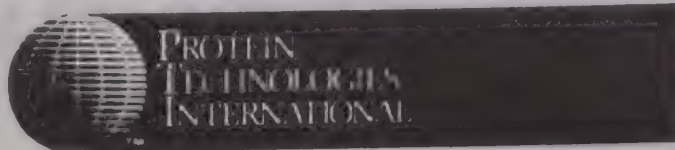
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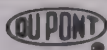


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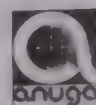
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